3.2. METHODSOFDEPRECIATION:

Different methods of calculating provision for depreciation are mainly accountingcustoms which may be used by different concerns taking into consideration their individualpeculiarities.Thefollowing are the main methodsofproviding depreciation:

3.2.1 Fixed Installment (or Fixed Percentage on Original Cost or Straight Line)

MethodUndermethodafixedpercentageoftheoriginalvalueoftheassetiswrittenoffeveryyear so as to reduce the asset account to nil or to its scrap value at the end of the estimatedlifeoftheasset.Toascertaintheannualchargeunderthismethodallthatisnecessaryistodividetheoriginalvalueoftheasset(minusitsresidualvalue,ifany)bythenumberofyearsofits estimatedlifei.e.,

$$\text{Depreciation} = \frac{\text{Cost price of asset} - \text{ScrapValue}}{\text{Estimated life of asset}}$$

If, for example, a machine costing Rs. 11, 000/- is estimated to have a life of 10 years and the scrap value is estimated Rs. 1, 000/- at the end of its life, the amountof depreciation wouldbe

$$\text{Rs.}\frac{11{,}000-1{,}000}{10} = \text{Rs.}1{,}000$$

The amount of depreciation charged during each period of the asset's life is constant.If the charge of depreciation is plottedannually on a graph paper and the points joinedtogether, then the graph will reveal a straight line that is why it is also called as straight linemethod.

This method is suggested in case of assets where in the service value declines as afunction of time and that too at a uniform rate. The repairs, maintenance and revenue alsoremainmoreorless constant.

It shouldbe noted carefully thatif depreciation is given as some percentage perannumandiftheassetispurchasedduringtheaccountingyear,sayonJuly1st thendepreciationfor sixmonthsistobecharged,iftheaccountingyear closeson31stDecember.

3.2.1.1 MeritsofFixed Installment Method

i. Thismethodissimpletounderstandandeasytoapply.

ii. Itcanwritedownanassettozeroattheendofitsworkinglife,ifsodesired.

iii. This method is very suitable for those assets which have a fixed life e.g.,furniture, fixtures, short leases, patents and copyright and other assets of asmallintrinsicvalue,repairchargesarelessandthepossibilityof obsolescence alsoless.

3.2.1.2 DemeritsofFixedInstallmentMethod

i. The charge for depreciation remains constant year after year. The expenses ofrepairs andmaintenance are increasing as the assetgrows older. The profitandlossaccountthusinthelateryearsbearsmorethan itsshareofvaluation.

ii. Itbecomesdifficulttocalculatethedepreciationonadditionsmadeduringyear.

iii. Under this method the depreciation charge remains the same from year to yearirrespective of the use of the asset. Thus it does not take into consideration theeffective utilizationoftheasset.

iv. Itis nottakingintoconsiderationtheinterestoncapitalinvestedinfixedassets.

v. Itdoesnotprovidefundsreplacementofassets.

vi. This method tends to report an increasing rate of return on investment in the assetamount due to the fact that the net balance of the asset amount is taken. In spite ofthese drawbacks, this method is mostly used by firms in U.S.A Canada, U.K., andsomefirmsinIndia.

vii.

Example 1: Calculate the rate of depreciation under straight line method (SLM) in each of the following alternative cases:

Case	Purchase Price of Machine (₹)	Expenses to be Capitalized (₹)	Estimated Residual Value (₹)	Expected Useful Life
(a)	80,000	20,000	40,000	4 years
(b)	17,000	3,000	2,000	10 years

Solution:

Step 1: Calculation of Total Cost of Asset

Total cost of Asset = Purchase Price + Expenses to be capitalized

Case (a) = ₹80,000 + ₹20,000 = ₹1,00,000

Case (b) = ₹17,000 + ₹3,000 =₹20,000

Step 2: Calculation of Amount of Depreciation per year

$$\text{Amount of Depreciation} = \frac{\text{Total Cost of Asset} - \text{Estimated Residual Value}}{\text{Expected Useful Life}}$$

$$\text{Case (a)} = \frac{₹1,00,000 - ₹40,000}{4} = ₹15,000$$

$$\text{Case (b)} = \frac{₹20,000 - ₹2,000}{10} = ₹1,800$$

Step 3: Calculation of the Rate of Depreciation under SLM

$$\text{Rate of Depreciation (under SLM)} = \frac{\text{Amount of Depreciation}}{\text{Total Cost of Asset}} \times 100$$

$$\text{Case (a)} = \frac{₹15,000}{₹1,00,000} \times 100 = 15\%$$

$$\text{Case (b)} = \frac{₹1,800}{₹20,000} \times 100 = 9\%$$

Example 2: On 1st January 2012, X Ltd. purchased a second-hand machine for ₹52,000 and spent ₹2,000 as shipping and forwarding charges, ₹5,000 as import duty, ₹500 as carriage inwards, ₹1,500 as repair charges, ₹500 as installation charges, ₹400 as brokerage of the middleman and ₹100 for an iron pad. It was estimated that the machine will have a scrap value of ₹2,000 at the end of its useful life which is 20 years. On 30th Sept 2012 repairs & renewals amounted to ₹2,000. On 1st July 2014, this machine was sold for ₹30,600.

Required: Prepare the machinery account for the first three years.

Solution:

Total Cost of Machinery = Purchase Price + Expenses to be capitalized

= ₹52,000 + ₹2,000 + ₹5,000 + ₹500 + ₹1,500 + ₹500 + ₹400 + ₹100

= ₹62,000

$$\text{Amount of Depreciation p.a.} = \frac{\text{Total Cos t of Machine} - \text{Estimated Scrap value}}{\text{Expected Useful is Life}}$$

$$= \frac{62,000 - 2,000}{20} = ₹3,000$$

3.2.2.

Dr. **Machinery Account** **Cr.**

Date	Particulars	₹	Date	Particulars	₹
01.01.12	To Bank A/c (Cost)	52,000	31.12.12	By Depreciation A/c	3,000
	To Bank A/c (Expenses)	10,000		By Balance c/d	59,000
		62,000			**62,000**
01.01.13	To Balance b/d	59,000	31.12.13	By Depreciation A/c	3,000
				By Balance c/d	56,000
		59,000			**59,000**
01.01. 14	To Balance b/d	56,000	01.07.14	By Depreciation A/c	1,500
				By Bank A/c	30,600
				By P&L A/c (Loss)	23,900
		56,000			**56,000**

Working Notes:

i) Book Value as on date of sale = ₹56,000 – ₹1,500 = ₹54,500.

ii) Loss on sale = Book Value as on date of sale – Sale proceeds
= ₹54,500 – ₹30,600 = ₹23,900.

iii) The amount spent on repairs and renewals on 30.09.2012 is of revenue nature and not of capital nature and hence, not debited to machinery account.

Example 3: Kumaran Brothers purchased a Machinery on 1.1.2012 for ₹5,00,000. On 1.1.2014 the machinery was sold for ₹4,00,000. The firm charges depreciation at the rate of 15% per annum on Straight Line Method. The books are closed on 31st March every year. Prepare Machinery account and Depreciation account.

Solution:

Dr. **Machinery Account** **Cr.**

Date	Particulars	₹	Date	Particulars	₹
1-1-2012	To Bank A/c	5,00,000	31-3-2012	By Depreciation A/c	18,750
				By balance c/d	4,81,250
		5,00,000			**5,00,000**
1-4- 2012	To balance b/d	4,81,250	31-3-2013	By Depreciation A/c	75,000
				By balance c/d	4,06,250
		4,81,250			**4,81,250**
1-4- 2013	To balance b/d	4,06,250	1-1- 2014	By Depreciation A/c	56,250
			"	By Bank A/c	3,50,000
		4,06,250			**4,06,250**

Dr. **Depreciation Account** **Cr.**

Date	Particulars	₹	Date	Particulars	₹
31-3-2012	To Machinery A/c	18,750	31-3-2012	By Profit & Loss A/c	18,750
31-3-2013	To Machinery A/c	75,000	31-3- 2013	By Profit & Loss A/c	75,000
1-1- 2014	To Machinery A/c	56,250	1-1-2014	By Profit & Loss A/c	56,250

Calculation of Profit or Loss on Sale of Machinery

Date	Particulars	₹
1.1.2012	Cost	5,00,000
31.3.2012	Depreciation $5,00,000 \times {}^{15}/_{100} \times {}^{3}/_{12}$	18,750
	Book Value	4,81,250
31.3.2013	Depreciation	75,000
	Book value	4,06,250
1.1.2014	Depreciation $5,00,000 \times {}^{15}/_{100} \times {}^{9}/_{12}$	56,250
	Book value	3,50,000
	Sales value	4,00,000
	Profit	50,000

3.2.2.1 MeritsofDiminishingBalanceMethod

i. It tends to give a fairly even charge of depreciation against

revenue each year.Depreciation is generally heavy during the first few years and is counter –balanced by the repairs beinglightandin thelater years when repairs areheavy thisis counter– balancedby the decreasing chargefor depreciation.This concept is based on the logic that as an asset grows order, the amount ofdepreciationgoes ondecreasing.

ii. Fresh calculations of depreciation are not necessary as and when additions aremade.

iii. Thismethodisrecognizedbytheincometaxauthorities inIndia.

iv. It doesnotprovidefor replacementofassetontheexpiryofitsusefullife.

v. This method is suitable for plantand machinery,building etc. Where theamount of repairs and renewals increase as the assetgrows older and thepossibilitiesofassets aremore.

3.2.3. DiminishingBalance(orReducingInstallment orWrittenDownValue)Method

- Underthismethod,depreciationiscalculatedatacertainpercentageeach yearonthebalance ofthe assetwhichisbroughtforwardfromthe previousyear;
- Theamountofdepreciation chargedineach periodisnotfixedbutitgoesondecreasinggraduallyasthebeginningbala nceoftheassetineach yearwillreduce.
- Thecharges ininitialperiodsarehigher thanthoseinthelater periods.
- Overall charges, i.e., amount of depreciation, repairs and maintenance taken togetherremainsequalthroughoutthelife oftheasset.
- This method is justified in the cases where 1. there is much uncertainty of revenue inlateryears and2.

3.2.2.2 .DemeritsofDiminishingBalanceMethod

i. The original cost of the asset is altogether lost sight of in subsequent years andthe assetcanneverbereducedtozero.

ii. Thismethoddoesnottakeintoconsiderationtheassetasaninvest mentandinterestisnottakenintoconsideration.

As comparedtothefirstmethod,itisdifficulttodeterminethesuitablerateofdepreciation

3.2.3DISTINCTIONBETWEENSTRAIGHTLINEMETHODSANDDIMINISHINGBALANCEMETHOD

Pointsof Distinction	**StraightLineMethod**	**DiminishingBalance Method**
1. Change inDepreciation Amount	Throughoutthelifeoftheasset,theamount for depreciation remains to beequal.	Amount of depreciation is more duringearlieryears of thelife of assetthanlateryearsandthereforeamountisneverequal.
2. Balance inAssetsA/c	Assets A/c at the expiry of the expectedlifebecomesnil.	Theamount neverbecomesnil.
3. Overall Changes	Theoverallchargei.e.,Depreciationandrepairstakentogethergoonincreasing from year to year. In otherwordstheamountdepreciationandrepairsisrelativelylessduringtheearlier years of the life of the asset thanlateryearsbecomerepairsgoonincreasingwithuseofasset.	Overallchargeremainsmoreorlesssame for every year throughout the lifeof the asset. Since depreciation goes ondecreasing and amount of repairs goesonincreasing.
4. Profits	Profitsunderthismethodaremoreduringtheearlieryearsofthelifeofthe asset.	Profits are less during earlier years thanthe lateryears.

-

Example 5: On 1.1.2010 a machine was purchased for ₹1,00,000. On 30.9.2012 a new machine was purchased for ₹20,000 installation expenses being ₹5,000.

Show the Machinery Account up to 31st Dec. 2013 assuming that the rate of depreciation was 10% on written down value method.

Solution:

In the books of .....

Dr. Machinery Account Cr.

Date	Particulars	₹	Date	Particulars	₹
2010			2010		
1 Jan.	To Bank A/c	1,00,000	31 Dec.	By Depreciation A/c	10,000
				By Balance c/d	90,000
		1,00,000			**1,00,000**
2011			2011		
1 Jan.	To Balance b/d	90,000	31 Dec.	By Depreciation A/c	9,000
				By Balance c/d	81,000
		90,000			**90,000**
2012			2012		
1 Jan.	To Balance b/d	81,000	31 Dec.	By Depreciation A/c (8,100+ 625)	8,725
30 Sept.	To Bank A/c	20,000		By Balance c/d	97,275
	To Bank A/c (Installation expenses)	5,000			
		1,06,000			**1,06,000**
2013			2013		
1 Jan.	To Balance b/d	97,275	31 Dec.	By Depreciation A/c	9,728
				By Balance c/d	87,547
		97,275			**97,275**
2014					
1 Jan.	To Balance b/d	87,547			

Example 6: On 1st January 2012, X Ltd. purchased a second-hand machine for ₹58,000 and spent ₹2,000 on its erection. On 1st July 2014, this machine was sold for ₹28,600.

Required: Prepare the machinery account of the first 3 years according to the written down value taking the rate of depreciation at 10% p.a.

Dr. **Machinery Account** **Cr.**

Date	Particulars	₹	Date	Particulars	₹
01.01.2012	To Bank A/c	58,000	31.12.2012	By Depreciation A/c	6,000
	To Bank A/c (Erection charges)	2,000		$\left[60{,}000\times\frac{10}{100}\right]$	
				By Balance c/d	54,000
		60,000			**60,000**
01.01.2013	To Balance b/d	54,000	31.12.2013	By Depreciation A/c	5,400
				$\left[54{,}000\times\frac{10}{100}\right]$	
				By Balance c/d	48,600
		54,000			**54,000**
01.01.2014	To Balance b/d	48,600	01.07. 2014	By Depreciation A/c	2,430
				$\left[48{,}600\times\frac{10}{100}\times\frac{6}{12}\right]$	
				By Bank A/c	28,600
				By P&L A/c (Loss)	17,570
		48,600			**48,600**

i) Book value as on date of sale = ₹ $48{,}600-\left(48{,}600\times\frac{10}{100}\times\frac{6}{12}\right)$ = ₹46,170

ii) Loss on Sale = Book value – Sale proceeds = ₹46,170 – ₹28,600 = ₹17,570

Example 7: A company whose accounting year is the calendar year purchased on 1st April, 2011 machinery costing ₹30,000. It further purchased machinery on 1st October 2011 costing ₹20,000 and on 1st July 2012,costing ₹10,000. On 1st January 2013 one third of the machinery which was installed on 1st April became obsolete and was sold for ₹3,000.

Show how the machinery account would appear in the books of company. The depreciation to be charged at 10% p.a. on written down value method.

Solution:

Dr. **Machinery Account** **Cr.**

Date	Particulars	₹	Date	Particulars	₹
2011			2011		
April 1	To Bank A/c	30,000	Dec. 31	By Dep. A/c (2,250 + 500)	2,750
Oct.1	To Bank A/c	20,000	"	By Balance c/d	47,250
		50,000			**50,000**
2012			2012		
Jan. 1	To Balance b/d	47,250	Dec. 31	By Dep. A/c (4,725 + 500)	5,225
July 1	To Bank A/c	10,000		By Balance c/d	52,025
		57,250			**57,250**
2013			2013		
Jan. 1	To Balance b/d	52,025	Jan. 1	By Bank A/c	3,000
			Jan. 1	By P & L A/c	5,325
			Dec. 31	By Dep. A/c	4,370
			"	By Balance c/d	39,330
		52,025			**52,025**
2014 Jan 1	To Balance b/d	39,330			

3.4 ANNUITYMETHOD

1. ThefixedInstallmentMethodandtheReducingBalancemethodofchargingdepreciationignoretheinterestfactor.
2. The Annuity Method takes care of this factor. Under this method, the depreciation ischarged on the basis that besides losing the original cost of asset, the business

alsolossesinterestontheamountusedforbuyingthe asset.

3. The terms “Interest” here means the interest which the business could have earnedotherwise if the money used in purchasing the asset would have been invested in someotherformofinvestment.
4. Thus, according to this method, such an amount is charged by the way of depreciationwhich taken into A/c not only the cost of the asset but also interest there on at anacceptedrate.
5. The amount of interest is calculated on the book value of the asset, in the beginning ofeachyear.
6. The amount of depreciation is uniform and is determined on the basis of annuity table.Follows:Rs.5,000x2.48685=Rs12,434or(say)Rs12,500.

7.

Example 9: A firm purchases a lease-hold property for period of five years for ₹10,000 on 1.1.2009. It decides to write off the lease by Annuity method presuming the rate interest at 5% p.a. The Annuity table shows that the annual amount necessary to write off ₹1 at 5% p.a. is ₹0.230976. You are required to prepare the Lease Hold Property Account for five years and show the net amount to be charged to the Profit and Loss account for these five years.

Solution:

Dr. **Lease Hold Property Account** **Cr.**

Date	Particulars	₹	Date	Particulars	₹
2009			**2009**		
January 1	To Bank	10,000.00	December 31	By Depreciation	2,309.76
December 31	To Interest	500.00	December 31	By Balance c/d	8,190.24
		10,500.00			**10,500.00**
2010			**2010**		
January 1	To Balance b/d	8,190.24	December 31	By Depreciation A/c	2,309.76
December 31	To Interest	409.52	December 31	By Balance c/d	6,290.00
		8,599.76			**8,599.76**
2011			**2011**		
January 1	To Balance b/d	6,290.00	December 31	By Depreciation A/c	2,309.76
December 31	To Interest	314.50	December 31	By Balance c/d	4,294.74
		6,604.50			**6,604.50**
2012			**2012**		
January 1	To Balance b/d	4,294.74	December 31	By Depreciation A/c	2,309.76
December 31	To Interest	214.74	December 31	By Balance c/d	2,199.72
		4,509.48			**4,509.48**
2013			**2013**		
January 1	To Balance b/d	2,199.72	December 31	By Depreciation A/c	2,309.76
December 31	To Interest	110.04			
		2,309.76			**2,309.76**

Statement Showing the Amount Chargeable to the Profit and Loss Account

Year	Depreciation (Debited)	Interest (Credited)	Net Charge Against Profits
2009	2,309.76	500.00	1,8097.6
2010	2,309.76	409.52	1,900.24
2011	2,309.76	314.50	1,995.26
2012	2,309.76	214.74	2,095.02
2013	2,309.76	110.04	2,199.72
	11,548.80	**1,548.80**	**10,000.00**

5. Sinking fund method or Depreciation fund method; under this method ,the