DEPRECIATION

Definition. The value of asset gradually reduces on account of use. Such reduction in value is known as depreciation. Different authors have given different definitions of depreciation, such as:

"Depreciation may be defined as the permanent and continuous diminution in the quality, quantity or value of an asset."

— Pickles

"Depreciation is the gradual and permanent decrease in the value of an asset from any cause."

— Carter

"Depreciation may be defined as a measure of the exhaustion of the effective life of an asset from any cause during a given period."

—Spicer & Pegler

"Depreciation is the diminution in intrinsic value of asset due to use and/or the lapse of time."

—The Institute of Cost & Management Accountants, England

"Depreciation is the reduction in value of a fixed asset occasioned by physical wear and tear, obsolescence or the passage of time."

Northcott & Forsyth

"Depreciation is the diminution in the value of assets owing to wear and tear, effluscion of time, obsolescence or similar causes."

—Cropper

From the above definitions it follows that an asset gradually declines on account of use and passage of time and this causes permanent reduction in the value and utility of asset. Such reduction in the value or utility of asset is called depreciation. In other words, expired cost or utility of asset is depreciation.

Causes of Depreciation. The main causes of depreciation may be divided into two categories, namely:

(1) Internal and (2) External

1. **Internal Causes.** Depreciation which occurs for certain inherent normal causes, is known as internal depreciation. The causes of internal depreciation are:

   (a) **Wear and Tear.** Some assets physically deteriorate due to wear and tear in use. More and more use of an asset, the greater would be the wear and tear. Physical deterioration of an asset is caused from movement, strain, friction, erasion etc. · An obvious example of this is Motor Car which rapidly wears out. Other assets like this are building, plant, machinery, furniture, etc. The wear and tear is general but primary cause of depreciation.

   (b) **Depletion.** Some assets declines in value proportionate to the quantum of production, e.g. Mine, Quarry etc. With the raising of coal from coal mine the total deposit reduces gradually and after sometime it will be fully exhausted. Then its value will be reduced to nil.

2. **External Causes.** Depreciation caused by some external reasons is called external depreciation. The causes of external depreciation are:

   (a) **Obsolescence.** Some assets, although in proper working order, may become obsolete. For example, old machine becomes obsolete with the invention of more economical and sophisticated machine whose productive capacity is generally larger and cost of production less. In order to survive in the competitive market the manufacturers must instal new machine replacing the old one. Again, it may happen that the articles produced by old machine are no longer saleable in the market on account of change of habit and taste of the people. In such a case the old machine, although in good working condition, must be discarded and the new one purchased.

   (b) **Efflux of Time.** Some assets diminish in value on account of sheer passage of time, even though they are not used. e.g. Leasehold Property, Patent Right, Copyright etc. Suppose, we take a lease of a house for 10 years for Rs.10,000. Its annual depreciation will be Rs. 1,000 (10,000 ÷ 10), irrespective of whether the house has been used or not. Because with the end of lease after 10 years, the house will go out of our possession.

   (c) **Accident —** Assets may be destroyed by abnormal reasons such as fire, earthquake, flood etc. In such a case the destroyed asset must be written off as loss and a new one purchased.

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Difference between Depreciation and Fluctuation. Depreciation of asset and fluctuation in its market value are not the same thing. Suppose, a businessman purchases a machine the life of which is estimated at 10 years and charges depreciation accordingly each year. If for certain reasons the market value of that machine decreases by, say 20%, the businessman need not consider this decrease at all. Because, the productive capacity or the utility of the machine to the business has not been reduced on account of fall in its market value. So he will not have to suffer any loss, unless he sells the machine. But the machine is not intended for sale — it will be used permanently in the business. So the business will ignore the fall in market price. But depreciation cannot be ignored — it must be considered. Thus we see that there is no relationship between depreciation and fluctuation. The points of distinction between the two are stated below in a tabular form:

Depreciation	Fluctuation
1. It reduces productive capacity or utility of asset.	1. It does not reduce productive capacity or utility of asset.
2. It must occur.	2. It may not occur.
3. It reduces value of asset gradually.	3. The value of asset may rise or fall on account of fluctuation.
4. Loss by way of depreciation must be considered.	4. Generally, it is not taken into account. However, in case of current assets permanent fall in price is considered.
5. It is a regular loss — it must be charged throughout the working life of asset.	5. It is generally irregular.
6. It always indicates loss.	6. It may indicate either profit or loss. Increase in market value means profit, while decrease means loss.

Characteristics of Depreciation. Depreciation has the following characteristics:

(1) Depreciation is charged in case of fixed assets only, e.g. Building, Plant and Machinery, Furniture etc. There is no question of depreciation in case of current assets — such as Stock, Debtors, Bills Receivable etc.

(2) Depreciation causes perpetual, gradual and continuous fall in the value of asset.

(3)   Depreciation occurs till the last day of the estimated working life of asset.

(4)   Depreciation occurs on account of use of asset. In certain cases, however, depreciation may occur even if the assets are not used, e.g. Leasehold Property, Patent Right, Copyright etc.

(5)   Depreciation is a charge against revenue of an accounting period.

(6)   Depreciation does not depend on fluctuations in market value of asset.

(7)   The amount of depreciation of an accounting year cannot be determined precisely— it has to be estimated. In certain cases, however, it may be ascertained exactly, e.g. Leasehold Property, Patent Right, Copyright etc.

(8)   Total depreciation of an asset cannot exceed its depreciable value (cost less scrap value).

Basic Factors of Determination of Depreciation. For calculating depreciation the basic factors are:-

1.   The original cost of the asset.

2.   The estimated working life of the asset or the number of years the asset is expected to last.

3.   The estimated residual or scrap value at the end of its life. It is the value which the asset will fetch when discarded as useless.

4.   The amount to be spent periodically for repairs and renewals. If the repairs necessary to keep the asset in a proper state of efficiency are regularly carried out, the life of the asset is prolonged and the amount of annual depreciation is proportionately lowered.

5.   The possibility of the asset becoming obsolete. If there are great chances of improvements being made in a particular asset on account of inventions, higher depreciation should be written off such an asset.

Usually engineers and experts give their opinion about these and they are accepted by businessmen. After getting information on all these points, it is easy to assess the rate of depreciation.

Methods for providing Depreciation. Fixed assets differ from each other in their nature so widely that the same method of depreciation cannot be applied to each. The following method have therefore been evolved for depreciating various assets:-

1.   **Fixed Instalment or Straight Line or Original Cost Method.** Under this method the expected life of the asset or the period during which a particular asset will

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render service is first calculated. The cost of the asset less scrap value, if any, at the end of its expected life is divided by the number of years of its expected life and each year a fixed amount is charged in accounts as depreciation. The amount chargeable in respect of depreciation under this method remains constant from year to year. This method is also known as the Straight Line Method, because if a graph of the amounts of annual depreciation is drawn, it would be a straight line.

Entries. The entries that will have to be made under this method are very simple. The journal entries will be as under:-

1. Depreciation Account
      To Asset Account
   (Being the depreciation of the asset)

2. P & L Account
      To Depreciation Account
   (Being the amount of depreciation charged to P & L A/c)

These entries will be passed at the close of each year so long as the asset lasts. In the last year, the scrap will be sold, and with the amount that realised by the sale, the following entry will be passed:-

3. · Cash Account
      To Asset Account
   (Being the sale price of scrap realised).

Advantages. (1) It is simple and easy to work out.

(2) The book value of the asset can be reduced to zero.

Disadvantages. (1) This method, in spite of its being simplest is not very popular because of the fact that whereas each year's depreciation charge is equal, the charge for repairs and renewals goes on increasing as the asset becomes older. The result is that the Profit and Loss Account has to bear a light burden in the initial years of the asset but later on this burden becomes heavier.

(2) Interest on money locked up in the asset is not taken into account as is done in some other methods.

(3) No provision for the replacement of the asset is made.

(4) Difficulty is faced in calculating depreciation on additions made during the year.

Scope of Application. On account of the above mentioned advantages and disad-
vantages, the method is generally applied in case of those asset which have small value
or which do not require many repairs and renewals e.g. copyright, patents, short leases
etc.

Illustration 25.1

On 1st January 1991 Munir purchased a machinery for Rs.21,000. The estimated
life of the machine is 10 years after which its break up value will be Rs.1,000 only. Find
out the amount of annual depreciation according to fixed instalment method and prepare
the machinery account for the first three years.

Solution:

Annual depreciation

$$= \frac{\text{Cost of machinery} - \text{Break up value}}{\text{Estimated life of machinery}}$$

$$= \frac{21000 - 1000}{10} = \text{Rs.2000.}$$

Machinery Account

1991		Rs.	1991			Rs.
Jan.1	To Bank Account	21,000	Dec.31	By Depreciation A/c		2,000
			"	" Balance c/d		19,000
		21,000				21,000
1992			1992			
Jan.1	To Balance b/d	19,000	Dec.31	By Depreciation A/c		2,000
			"	" Balance c/d		17,000
		19,000				19,000
1993			1993			
Jan.1	To Balance b/d	17,000	Dec.31	By Depreciation A/c		2,000
			"	" Balance c/d		15,000
		17,000				17,000

2. Diminishing Balance Method. This method is also known as written down
value method or reducing instalment method. Under this method the asset is depreciated

at fixed percentage calculated on the debit balance of the asset which is diminished year after year on account of depreciation.

Entries. The entries in this case will be identical to those discussed in the case of the Fixed Instalment Method. Only the amount of depreciation will be differently calculated.

Advantage. (1) The strongest point in favour of this method is that under it the total burden imposed on Profit and Loss Account due to depreciation and repairs remains more or less equal year after year since the amount of depreciation goes on diminishing with the passage of time whereas the amount of repairs goes on increasing as asset grow older.

(2) Separate calculations are unnecessary for additions and extensions, though in the first year some complications usually arises on account of the fact that additions are generally made in the middle of the year.

Disadvantages. (1) This method ignores the question of interest on capital invested in the asset and the replacement of the asset.

(2) This method cannot reduce the book value of an asset to zero, if it is desired.

(3) Very high rate of depreciation would have to be adopted otherwise it will take a very long time to write an asset down to its residual value.

Scope of Application. This method is most suited to plant and machinery where additions and extensions take place so often and where the question of repairs is also very important. This method does not suit the case of lease, whose value has to be reduced to zero.

Illustration 25.2

On 1st January, 1994, a merchant purchased Plant and Machinery costing Rs.25,000. It has been decided to depreciate it at the rate of 20 percent p.a. on the Diminishing Balance Method. Show the Plant and Machinery Account for the first three years.

Solution:

Plant and Machinery Account

1994			Rs.	1994			Rs.
Jan.1	To Cash		25,000	Dec.31	By Depreciation		5,000
				"	By Balance c/d		20,000
			25,000				25,000

1995		Rs.	1995		Rs.
Jan.1	To Balance b/d	20,000	Dec. 31	By Depreciation	4,000
				By Balance c/d	16,000
		20,000			20,000
1996			1995		
Jan. 1	To Balance b/d	16,000	Dec. 31	By Depreciation	3,200
				By Balance c/d	12,800
		16,000			16,000

Illustration 25.3 *(Change in depreciation method)*

A manufacturing firm purchased on 1st January, 1991 certain machinery for Rs.1,00,000 and spent Rs.2,000 on its erection. On 1st July in the same year additional machinery costing Rs.50,000 was acquired. On 1st January, 1993 the machinery purchased on 1st January, 1991 having become obsolete was auctioned for Rs.40,000 and on the same date fresh machinery was purchased at a cost of Rs.25,000.

Depreciation was provided for annually on 31st December at the rate of 10 per cent per annum on the original cost of the asset. In 1993 however, this method was changed and that of writing off 15 per cent on the written down value was adopted.

Give the Machinery account as it would stand at the end of each year from 1991 to 1995, making your calculations to the nearest rupee.

Solution:

Machinery Account

1991		Rs.	1991		Rs.
Jan.1	To Cash (Purchase price)	1,00,000	Dec. 31	By Depreciation	12,700
	To Cash	2,000		By Balance c/d	1,39,300
July 1	To Cash	50,000			
		1,52,000			1,52,000

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Date	Particulars	Amount	Date	Particulars	Amount
1992 Jan.1	To Balance b/d	1,39,300	1992 Dec.31	By Depreciation	15,200
				By Balance c/d	1,24,100
		1,29,300			1,39,300
1993 Jan.1	To Balance b/d	1,24,100	1993 Jan.1	By Cash	40,000
	To Cash	25,000	"	By P & L A/c (Loss)	41,600
			Dec.31	By Depreciation	10,125
				By Balance c/d	57,375
		1,49,100			1,49,100
1994 Jan. 1	To Balance b/d	57,375	1994 Dec. 31	By Depreciation	8,606
				By Balance c/d	48,769
		57,375			57,375
1995 Jan.1	To Balance b/d	48,769	1995 Dec. 31	By Depreciation	7,315
				By Balance c/d	41,454
		48,769			48,769

Note: Depreciation in 1991 – on Rs. 1,02,000 at 10% = Rs.10,200. On Rs.50,000 at 10% for six months = Rs.2,500.

Total = Rs.10,200 + Rs.2,500 = 12,700.

Depreciation in 1992 – on Rs.1,02,000 at 10% = Rs.10,200. On Rs.50,000 at 10% for full year = Rs.5,000.

Total = Rs.10,200 + Rs.5,000 = Rs.15,200

Depreciation in 1993 – On Rs. 42,500 (50,000 – 7,500) at 15% = Rs. 6,375. On Rs. 25,000 at 15% = Rs.3,750.

Total = Rs.6,375 + Rs.3,750 = Rs.10,125.

3. Annuity Method. According to this method, the purchase of the asset concerned is considered an investment of Capital, earning interest at certain rate. The cost of the asset and also interest thereon are written down annually by equal instalments

until the book value of the asset in question is reduced to nil or its break up value at the end of its effective life. The annual charge to be made by way of depreciation is found out from Annuity Tables. The annual charge for depreciation will be credited to Asset Account and debited to Depreciation Account, while the interest will be debited to Asset Account and credited to Interest Account.

Entries. Under this method, journal entries have to be made in respect of (i) Interest and (ii) Depreciation. As regards interest, it has to be calculated on the debit balance of the Asset account at the commencement of the period at the given rate. The entry that is passed:

1. Asset Account
      To Interest Account
   (Being interest on capital sunk in asset)

With regard to depreciation the amount found out from the Depreciation Annuity Tables, the following entry is passed:

2. Depreciation Account
      To Asset Account .
   (Being the depreciation of asset)

It should be remembered that since interest is charged on the diminishing balance of the asset account, the amount of interest goes on declining year after year. But the amount of depreciation remains the same during the life time of the asset.

Advantages. (1) This method takes interest on the capital invested in the asset into account.

(2) It is regarded as most exact and precise from the point view of calculations and is therefore most scientific.

Disadvantages. (1) The system is very complicated.

(2) The burden on profit and Loss Account goes on increasing with the passage of time whereas the amount of depreciation charged each year remains constant. The amount of interest credited goes on diminishing as years pass by, the ultimate consequence being that the net burden on P and L a/c grows heavier each year.

(3) When the asset requires frequent additions and extensions, the calculations have to be changed frequently, which is very inconvenient.

Scope of Application. This method is best suited to those assets which require considerable investment and which do not call for frequent additions e.g. long leases.

Annuity Table

Amount required to write-off Rs. 1 by the Annuity Method.

Years	3%	3½ %	4%	4½ %	5%
3	0.353530	0.359634	0.360349	0.363773	0.367209
4	0.269027	0.272251	0.275490	0.278744	0.282012
5	0.216355	0.221481	0.224627	0.227792	0.230975
6	0.184598	0.187668	0.190762	0.193878	0.197017
7	0.160506	0.163544	0.166610	0.169701	0.172820
8	0.142456	0.145477	0.148528	0.151610	0.154722
9	0.128434	0.131446	0.134493	0.137574	0.140690
10	0.117231	0.120241	0.123291	0.126379	0.129505
15	0.083767	0.086825	0.089941	0.093114	0.096342
20	0.067217	0.070361	0.073582	0.076876	0.080243

Illustration 25.4

A firm purchases a 5 years' lease for Rs.40,000 on 1st January. It decides to write-off depreciation on the Annuity Method, presuming the rate of interest to be 5% per annum. Show the Lease Account for the first 3 years. Calculations are to be made to the nearest rupee.

Solution:

Note: According to the Annuity Table given above the annual charge for depreciation reckoning interest at 5 per cent p.a. would be 230975 x 40,000 = Rs.9,239.

LEASE ACCOUNT

1st Year		Rs.	1st Year		Rs.
Jan. 1	To Cash	40,000	Dec. 31	By Depreciation	9,239
Dec.31	To Interest	2,000		By Balance c/d	32,761
		42,000			42,000

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2nd Year			**2nd Year**		
Jan. 1	To Balance b/d	32,761	Dec. 31	By Depreciation	9,239
Dec. 31	To Interest	1,638		By Balance c/d	25,160
		34,399			34,399
3rd Year			**3rd Year**		
Jan. 1	To Balance b/d	25,160	Dec. 31	By Depreciation	9,239
Dec. 31	To Interest	1,258		By Balance c/d	17,179
		26,418			26,418
4th Year					
Jan. 1	To Balance b/d	17,179			
		17,179			

4. Depreciation Fund Method. This method is also known as Sinking Fund, Amortization Fund Method, etc. Under this method, a fund known as Depreciation Fund or Sinking Fund is created. Each year the Profit and Loss Account is debited and the Fund Account credited with a sum, which is so calculated that the annual sum credited to the Fund Account and accumulating throughout the life of the asset may be equal to the amount which would be required to replace the old asset. In order that ready funds may be available at the time of replacement of the asset an amount equal to that credited to the Fund Account is invested outside the business, generally in giltedged securities. The asset appears in the Balance Sheet year after year at its original cost, while Depreciation Fund A/c appears on the liability side.

Advantages. The most important advantages of this method is that it makes available a sum of money for the replacement of the asset, which has become useless. If separate provision was not made, the sum required to purchase the new asset will have to be drawn from the business which might effect the financial position of the concern adversely.

Disadvantages. (1) The burden on Profit and Loss Account goes on increasing as years pass by since the amount of depreciation every year remains same but the amount spent on repairs goes on increasing as the asset becomes old.

(2) It can also be said that the work of investing money is complicated.

(3) Prices of securities may fall at the time when they are to be realized as a result of which loss may have to be suffered.

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Scope of Application. This method is found suitable wherever it is desired not only to charge depreciation but also to replace the asset as happens in the case of Plant and Machinery and other wasting assets.

Entries. The following entries are necessary to record the depreciation and re-placement of an asset by this method:-

(a)   *First year (at the end)* .

(1)   Debit Profit and Loss Account and Credit Depreciation Fund Account with the amount of the annual depreciation charge. (2) Also debit Depreciation Fund Investment Account and Credit Cash Account with an equal amount.

(b)   *In subsequent years.*

(1)   Debit Depreciation Fund Investment Account and Credit Depreciation Fund Account with the amount of interest earned and reinvested. (2) Debit Profit and Loss Account and Credit Depreciation Fund Account with the annual depreciation instalment and (3) Debit Depreciation Fund Investment Account and Credit Cash Account with an equal amount.

(c)   *On replacement of asset.*

(1)   Debit Cash Account and Credit Depreciation Fund Investment Account with the amount realised by the sale of Investments. (2) Transfer any profit or loss on the sale of Investments to Profit and Loss Account. (3) Debit the new asset purchased and credit Cash Account. (4) Debit Depreciation Fund Account and credit the account of the old asset which has become useless.

The amount of annual depreciation to be provided for by the Depreciation Fund Method will be ascertained from sinking Fund Tables.

Sinking Fund Table

Annual Sinking Fund instalment to provide Re.1

Years	3%	3½ %	4%	4½ %	5%
3	0.323540	0.321934	0.320349	0.318773	0.317208
4	0.239027	0.237251	0.235490	0.233741	0.232012
5	0.188350	0.186481	0.184627	0.182792	0.180975
6	0.154598	0.152668	0.150762	0.148878	0.147017
7	0.130506	0.128544	0.126610	0.124701	0.122820
8	0.112446	0.110477	0.108528	0.106610	0.104722

9	0.098434	0.096446	0.094493	0.092575	0.090690
10	0.087231	0.085241	0.083291	0.081379	0.079505
15	0.053767	0.051825	0.049941	0.048114	0.046342
20	0.037216	0.035361	0.035580	0.031876	0.030243

Illustration 25.5

On 1st January, 1990 a four years lease was purchased for Rs.20,000 and it i decided to make provision for the replacement of the lease by means of a Depreciatio Fund, the investment yielding 4 per cent per annum interest. Show the necessary ledge accounts.

Solution:

To get Rs.1 at the end of 4 years at 4 percent an annual investment of Rs. .2,35,49 is necessary.

Therefore, for Rs.20,000 an annual investment of Rs.4,709.80 i.e. .235490 x 20,00 will be necessary.

Lease Account

1990 Jan.1	To Cash	Rs. 20,000	1990 Dec. 31	By Depreciation Fund	R 20,00

Depreciation Fund Account

1990 Dec.31	To Balance c/d	Rs. 4,709	Ps. 80	1990 Dec.31	By P&L Account	Rs. 4,709
1991 Dec.31	To Balance c/d	9,607	99	1991 Jan.1 Dec.31	By Balance c/d By Depreciation Fund. Investment By P&L Account	4,709 188 4,709
		9,607	99			9,607

9	0.098434	0.096446	0.094493	0.092575	0.090690
10	0.087231	0.085241	0.083291	0.081379	0.079505
15	0.053767	0.051825	0.049941	0.048114	0.046342
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		9,607	99			9,607

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		Rs.	Ps.				Rs.	Ps.
1992 Dec.31	To Balance c/d	14,702	11	1992 Jan.1 Dec.31 "	By Balance b/d By Depreciation Fund Investment By P&L Account		9,607 384 4,709	99 32 80
		14,702	11				14,702	11
1993 Dec. 31	To Lease Account	20,000	00	1993 Jan. 1 Dec.31	By Balance b/d By Depreciation Fund Investment By P&L Account		14,702 588 4,709	11 9 80
		20,000	00				20,000	00

Depreciation Fund Investment Account

		Rs.	Ps.				Rs.	Ps.
1990 Dec.31	To Cash	4,709	80	1990 Dec. 31	By Balance c/d		4,709	80
1991 Jan. 1 Dec.31 Dec.31	To Balance b/d To Depreciation Fund To Cash	4,709 188 4,709	80 39 80	1991 Dec. 31	By Balance c/d		9,607	99
		9,607	99				9,607	99
1992 Jan.1 Dec.31	To Balance b/d To Depreciation Fund To Cash	9,607 384 4,709	99 32 80	1992 Dec. 31	By Balance c/d		14,702	11
		14,702	11				14,702	11
1993 Jan.1 Dec.31	To Balance b/d To Depreciation Fund To Cash	14,702 588 4,709	11 9 80	1993 Dec. 31	By Cash		20,000	00
		20,000	00				20,000	00

Note: The cash instalment at the end of the last year will not be invested, because there is no point in buying the investments and selling them on the same date.

5. **Insurance Policy Method.** This method is a slight modification of the last method. Under this method the amount represented by the Depreciation Fund, instead of

being used to buy securities, is paid to an insurance company as premium. The insurance company issues a policy promising to pay a lump sum at the end of the working life of the asset for its replacement. The advantage of this method is that risk of loss on the sale of investments and the trouble and expense of buying investment are avoided, while disadvantage lies in the fact that the interest received on the premiums paid is comparatively very low.

When this method is employed the policy account will take the place of the Depreciation Fund Investment Account and no interest will be received at the end of each year, but the total interest on the premiums will be received when the policy matures.

Entries. Every year two entries will be made:-

In the beginning

1. Depreciation Insurance Policy Account
        To Cash Account
        (Being the payment of premium on depreciation policy)

2. At the end of year:
        Profit and Loss Account
            To Depreciation Fund Account
        (Being the amount of depreciation charged to P & L A/c).

When the policy will mature i.e., to say the amount of the policy will be received. The entry is:

3. Cash Account
        To Depreciation Insurance Policy Account
        (Being the policy amount realised).

The Depreciation Insurance Policy Account will show some profit. This will be transferred to Depreciation Fund Account, the entry being:

4. Depreciation Insurance Policy Account
        To Depreciation Fund Account

The asset account will have been shown throughout at its original cost. It now be written off by transfer to Depreciation Fund Account. The entry is:

5. Depreciation Fund Account
        To Asset Account

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Illustration 25.6

On 1st January, 1990 a business purchases a three years lease of premises for Rs.20,000 and it is decided to make provision for replacement of the lease by means of an insurance policy purchased for annual premium of Rs.6,400.

Show the ledger accounts dealing with this matter.

Solution:

Leasehold Account

1990		Rs.	1990		Rs.
Jan. 1	To Cash	20,000	Dec.31	By Depreciation Fund	20,000

Depreciation Fund Account

1990		Rs.	1990		Rs.
Dec.1	To Balance c/d	6,400	Dec.31	By P&L a/c	6,400
1991			1991		
Dec.1	To Balance c/d	12,800	Jan.1	By Balance b/d	6,400
			Dec.31	By P & L Account	6,400
		12,800			12,800
1992			1992		
Dec.31	To Leasehold Property	20,000	Jan.1	By Balance b/d	12,800
			Dec.31	By P & L Account	6,400
				By Leasehold	800
		20,000			20,000

Leasehold Policy Account

Date	Particulars	Rs.	Date	Particulars	R.
1990 Dec.31	To Cash	6,400	1990 Dec.31	By Balance c/d	6,40
1991 Jan.1	To Balance b/d	6,400	1991 Dec.31	By Balance c/d	12,80
Dec.31	To Cash	6,400			
		12,800			12,80
1992 Jan.1	To Balance b/d	12,800	1992 Dec.31	By Cash	20,00
	To Cash	6,400			
	To Depreciation Fund	800			
		20,000			20,00

6. **Revaluation Method.** As the name implies under this method, the assets are valued at the end of each period so that the difference between the old value and the new value, which represents the actual depreciation can be charged against Profit and Loss Account. This method is mostly used in case of assets like bottle, horses, packages, loose tools, casks etc. On rare occasions when on revaluation value of an assets is found to have increased, it being of temporary nature, is not taken into account.

This method is open to various objections. *Firstly* the method do not specify to which is the value that the experts are to estimate at the end of each year. however, appears that this is the market value. If so, to assess depreciation reference to market value is against the basic principles and theory of depreciation fixed asset has nothing to do with market value.

Secondly, the charge against Profit and Loss Account on account of depreciation will vary year to year though the asset renders the same service throughout of its time.

Thirdly, this method is unscientific, because there are great chances of manipulations.

7. Sum of the years' digits method (SYD). This is an accelerated method of depreciation which is also based on the assumption that the loss in the value of the fixed asset will be greater during the earlier years and will go on decreasing gradually with the decrease in the life of such asset. The SYD is found by estimating an asset's useful life in years, then assigning consecutive numbers to each year, and totalling these numbers. For n years,

$$SYD = 1+2+3+4 + ... + n$$

For example if the usefully life of an asset is 5 years, the SYD would be $1+2+3+4+5 = 15$. Determining the SYD factor by simple addition can be somewhat laborious for long-lived assets. For these assets the formula $\frac{n(n+1)}{2}$, where n = the number of periods in the asset's useful life can be applied to derive the SYD. In our example, we have

$$\frac{5(5+1)}{2} = \frac{30}{2} = 15.$$

The yearly depreciation is then calculated by multiplying the total depreciable amount for the life of the asset by a fraction whose numerator is the remaining useful life and whose denominator is the SYD. Thus in our example the calculations would be:

First year depreciation = 5/15 x depreciable cost.
Second year depreciation = 4/15 x depreciable cost.
Third year depreciation = 3/15 x depreciable cost.
Fourth year depreciation = 2/15 x depreciable cost.
Fifth year depreciation = 1/15 x depreciable cost.

Thus the formula for depreciation for this method is:

$$Depreciation = Depreciable\ cost \times \frac{remaining\ useful\ life}{SYD}$$

Illustration 25.7

ABC Ltd. purchased a truck for Rs.65,000 on 1st January 1991. The expected life was 5 years and salvage value Rs.5000. Calculate the annual depreciation expense by applying sum-of-the-years' digits method.

Solution:

Amount to be written off = Rs.65,000 – 5,000 = 60,000. SYD = 1+2+3+4+5 = 15

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The annual depreciation is:

First year depreciation	= 5/15 (60,000)	=	Rs. 20,000
Second year depreciation	= 4/15 (60,000)	=	Rs. 16,000
Third year depreciation	= 3/15 (60,000)	=	Rs. 12,000
Fourth year depreciation	= 2/15 (60,000)	=	Rs. 8,000
Fifth year depreciation	= 1/15 (60,000)	=	Rs. 4,000
	Total		Rs. 60,000

When asset is acquired during the year, the depreciation expense may be determined by dividing the fractional multipliers between the current and succeeding year. Using the data in the above illustration suppose the truck is purchased on 30th June 1991, the depreciation is computed as follows:

End of the year	Depreciable Cost Rs.	Year's Fraction Rs.	Year's Depreciation Rs.	Accumulated Depreciation Rs.	Cost Rs.	Book Value Rs.
1.	60,000	5/15 (1/2)	10,000	10,000	65,000	55,000
2.	60,000	5/15(1/2)	10,000			
	60,000	4/15(1/2)	8,000	28,000	65,000	37,000
3.	60,000	4/15(1/2)	8,000			
	60,000	3/15(1/2)	6,000	42,000	65,000	23,000
4.	60,000	3/15(1/2)	6,000			
	60,000	2/15(1/2)	4,000	52,000	65,000	13,000
5.	60,000	2/15(1/2)	4,000			
	60,000	1/15(1/2)	2,000	58,000	65,000	7,000
6.	60,000	1/15(1/2)	2,000	60,000	65,000	5,000

Scope. As an accelerated depreciation method, the SYD approach is most appropriate for those situations in which the asset is judged to render greater utility during its earlier life and less in its later life.

8. Double Declining Balance Method. This is another type of accelerated depreciation method followed generally in U.S.A. The depreciation expense is computed by multiplying the asset cost less accumulated depreciation by twice the straight line rate expressed in percentage. No provision is made for salvage value of the asset. Double declining balance rate is found:

$$\text{Double declining balance rate} = \frac{100\%}{\text{years of useful life}} \times 2$$

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Illustration 25.8

A printing machine is purchase for Rs.20,000 on January 1991. The scrap value is estimated at Rs.2,000 at the end of 5 years useful life of the asset. Calculate the annual depreciation charge by applying double declining balance method.

Solution:

$$\text{Depreciation rate} \quad \frac{100\%}{5} \times 2 = 40\%$$

The following table shows the depreciation for the five year period:

End of year	Asset Cost Rs.	Rate Depreciation	Amount Depreciation Rs.	Accumulated Depreciation Rs.	Book Value Rs.
1.	20,000	40%	8,000	8,000	12,000
2.	20,000	40%	4,800	12,800	7,200
3.	20,000	40%	2,880	15,680	4,320
4.	20,000	40%	1,728	17,408	2,592
5.	20,000	40%	1,037	18,445	1,555

In applying this method the entire original cost can never be depreciated. There is bound to be some balance though only a small one. In this illustration, a salvage value of Rs.1,555 is automatically provided for. However, an asset should not be depreciated below its salvage value of Rs.2,000. Therefore the depreciation expenses at the end of fifty year should be Rs.592 and not Rs.1,037.

9. **Depletion Method.** This method is specially suited to mines, quarries, sand pits etc. According to it the cost of the asset is divided by the total workable deposits. In this way, rate of depreciation per unit of output is ascertained. Depreciation in any particular year is charged on the basis of the output during that year. For example a mine was acquired at a cost of Rs.20,00,000 the quantity of minerals expected to be mined is 5,00,000 tons, the rate of depreciation per unit will be Rs.'4 i.e. (20,00,000 ÷ 5,00,000). If during the year 25,000 tons minerals is extracted, the amount of depreciation will be 25,000 x 4 = Rs.1,00,000.

10. **The Basis of use system.** One of the chief factors causing depreciation is use. For example in the case of Plant and Machinery, it is the total number of hours for which the machines work is the main factor and not their life. Therefore, depreciation should be charged on the basis of use. In order to calculate depreciation, the total

number of hours for which the machine is estimated to work is ascertained. The net cos of the asset is divided by the number of hours estimated and the result would give the amount of depreciation per hour. Each year depreciation would be written off at this rate on the number of hours worked during the year. Suppose, a machine is bought fo Rs.40,000 and its life is estimated at 20,000 hours. The hourly rate of depreciation wi be Rs. 2. If in a year machine is used for 1,000 hours, depreciation will be Rs. 200 (1000x2).

Depreciation of various Assets. We discuss below the problem of depreciating some given assets.

1. *Freehold Land and Building.* It means the land and building which has bee purchased outright and not on lease. In the case of building it will be seen that in it early life, few repairs will be needed. These repairs will keep the building in proper order But after some time the building will begin to decay and even the repairs will not succee in keeping it in proper working order. Efficient repairs, no doubt, add to the life of th building, but they cannot make it everlasting. After some considerable time the buildin will practically fall in spite of all the repairs. Hence it is absolutely necessary to charg depreciation on such building, so that by the time it falls down, its book value als disappears from the books of accounts. As this asset possesses a long life, the metho of depreciation employed should be such as it provide a fund for its reconstruction o its dilapidation. Thus either of the straight line method or reducing instalment metho may be adopted to depreciate this asset.

One of the peculiarity of land is that it does not generally depreciate. Its value ma and does fluctuate from time to time, but such fluctuations do not influence depreciatio in any way. Consequently older accountants were of the opinion that land should be le at the cost price in the books. According to modern opinion the idea of depreciation wit regard to land cannot be ruled out entirely. Agriculture land may lose its fertility. Bric land may depreciate. As such, in some cases at least land must be depreciated.

2. *Leasehold Land and Building.* By leasehold is meant the land that is take on lease for a certain number of years. The most general duration is 99 years, but ma of course be less or much more. If the lease under which the property is acquired i short, the Fixed Instalment Method of depreciation can be applied conveniently. If o the other hand, it be a long lease, the Annuity Method would be more suitable. The valu of the leasehold property should be written off during the term of the lease and the rat of depreciation should be fixed accordingly.

3. *Plant and Machinery.* This term includes machinery of different kinds e.g engines, boilers, fixed plant, running machinery, etc. As the working life of each one o them is different, the rate of depreciation should also be different. Though the Fixe Instalment Method can be suitably applied to depreciating Plant and Machinery but owin to the difficulty of calculating depreciation on additions made during the year, the Dimin ishing Balance Method is generally employed to depreciate this asset.

Loose Tools. As this asset is liable to breakage and pilferage, it should be valued. The difference between the present value and the value as per last Sheet should be treated as depreciation.

Furniture and Fixtures. The Diminishing Balance Method is usually employed to depreciate this asset. The rate of depreciation should be high enough to it to its residual value at the end of its working life.

Patents and Copyrights. There is a maximum legal life of such assets but mercial life (during which such assets can be effectively exploited) may even be The assets should be depreciated by the straight line method so that it is written n the legal or commercial life whichever is shorter.

Mines, Oil Wells, Quarries, etc. The depreciation should be estimated by the n method.

Goodwill. Goodwill has been defined as the benefit or advantage arising ular public patronage on account of facilities offered. The name under which the s is carried on acquires a reputation and consequently a saleable value. It can only when the entire business is sold off. It is an intangible asset. Though l is a fixed asset, it does not depreciate on account of wear and tear like Plant chinery etc. As Goodwill is not consumed in the process of earning income, it ecessary to depreciate it. But as no business, howsoever well established, can petual life, it is advisable to create a reserve from the P and L A/c in prosperous cause when profits fall and goodwill depreciates it may be difficult to write it off.

QUESTIONS.

ical:

What is depreciation and how is it brought about?

Name the different methods of providing for depreciation, and discuss any one of them in detail.

Explain the difference between (i) depreciation and fluctuation (ii) depreciation and obsolescence. How should obsolescence be provided for?

What are the objects of making provision for the depreciation of the fixed assets of a business.

Why should depreciation on Fixed Assets be brought into account. Discuss in detail the several methods of providing for depreciation.