



CHAPTER - 5

DEPRECIATION ACCOUNTING

Learning Objectives

After studying this chapter, you will be able to :

- ◆ Grasp the meaning and nature of depreciation.
- ◆ Determine the amount of depreciation from the total value of Property, Plant and Equipment and its useful life.
- ◆ Understand various methods of depreciation and learn advantages and disadvantages of such methods.
- ◆ To calculate the amount of profit or loss resulting from the sale/ disposal of Property, Plant and Equipment.
- ◆ Familiarize with the accounting treatment for change in the method of depreciation from Straight Line Method to Reducing Balance Method.

1. INTRODUCTION

Property, plant and equipment are tangible items that:

- (a) are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes; and
- (b) are expected to be used during more than a period of twelve months.

These tangible assets are utilized during operations of a business for a number of successive accounting periods. Value of such assets decreases with passage of time and its utilization i.e. wear and tear. Value of portion of property, plant and equipment utilized for generating revenue must be recovered during a accounting year to ascertain true income. This portion of cost of fixed asset allocated to a accounting year is called depreciation. Thus, Depreciation is the systematic allocation of the **depreciable amount** of an asset over its useful life.

Where, Depreciable amount is the cost of an asset, or other amount substituted for cost, less its residual value.

1.1 CONCEPT OF DEPRECIATION

Depreciation of an asset begins when it is available for use, i.e., when it is in the location and condition necessary for it to be capable of operating in the manner intended by management.

Depreciation is allocated so as to charge a fair proportion of the depreciable amount in each accounting period during the expected useful life of the asset.

The loss in the value of assets employed for carrying on a business being an essential element of business expenditure, it is necessary to calculate the amount of such loss and to make a provision, and therefore, arrive at the amount of profit or loss made by the business.

Basically, the cost of an asset used for purpose of business has to be written off over its economic (not physical) life which necessarily must be estimated. A point to remember is that usually, at the end of the economic life, an asset has some value as scrap or otherwise. The amount to be written off in each year should be as such which will reduce the book value of the asset, at the



end of its economic life, to its estimated scrap value.

A pertinent question, of course, is the price likely to prevail at the time of replacement. That is why some people advocate the calculation of depreciation on the basis of replacement price rather than cost.

1.2 COMPONENT METHOD OF DEPRECIATION

It may be noted that Accounting Standards as well as the Companies Act, 2013 allow depreciation to be charged on a component basis. Each part of an item of Property, Plant and Equipment with a cost that is significant in relation to the total cost of the item should be depreciated separately. An enterprise should allocate the amount initially recognised in respect of an item of property, plant and equipment to its significant parts and depreciates each such part separately based on the useful life and residual value of particular component. A significant part of an item of property, plant and equipment may have a useful life and a depreciation method that are the same as the useful life and the depreciation method of another significant part of that same item. Such parts may be grouped in determining the depreciation charge.

Example:

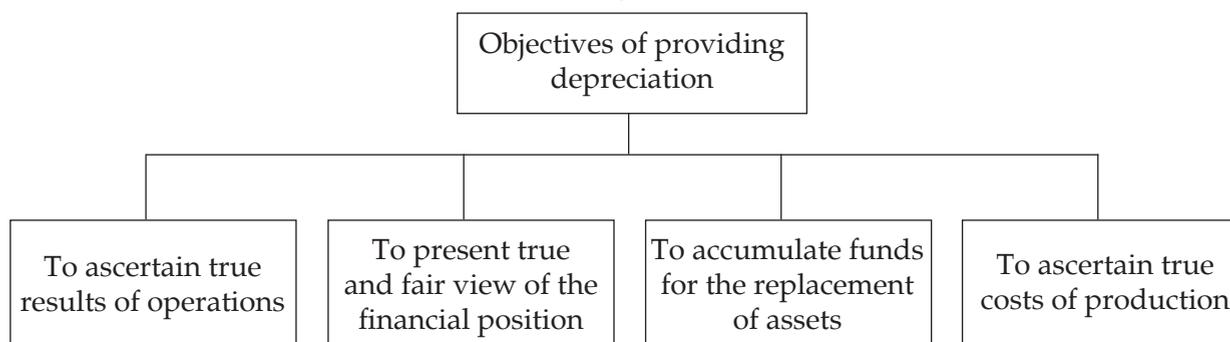
It may be appropriate to depreciate separately the airframe and engines of an aircraft.

1.3 OBJECTIVES FOR PROVIDING DEPRECIATION

Prime objectives for providing depreciation are:

- (1) *Correct income measurement:* Depreciation should be charged for proper estimation of periodic profit or loss.
- (2) *True position statement:* Value of the fixed assets should be adjusted for depreciation charged in order to depict the actual financial position.
- (3) *Funds for replacement:* Generation of adequate funds in the hands of the business for replacement of the asset at the end of its useful life.
- (4) *Ascertainment of true cost of production:* For ascertaining the cost of the production, it is necessary to charge depreciation as an item of cost of production.

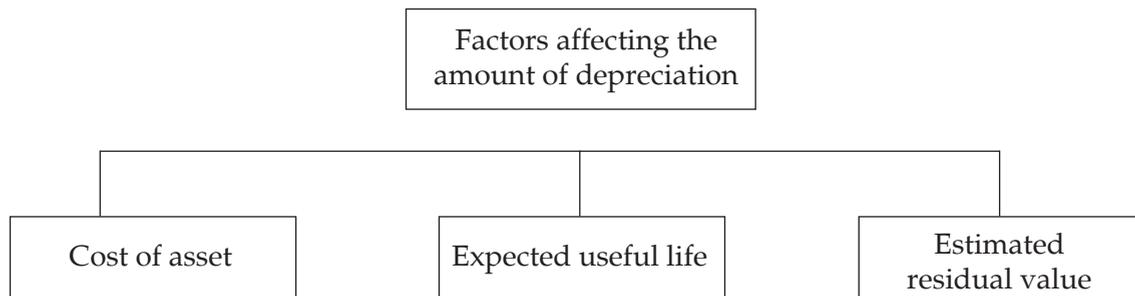
Further depreciation is a non-cash expense and unlike other normal expenditure (e.g. wages, rent, etc.) does not result in any cash outflow. Further depreciation by itself does not create funds it merely draws attention to the fact that out of gross revenue receipts, a certain amount should be retained for replacement of assets used for carrying on operation.



2. FACTORS IN THE MEASUREMENT OF DEPRECIATION

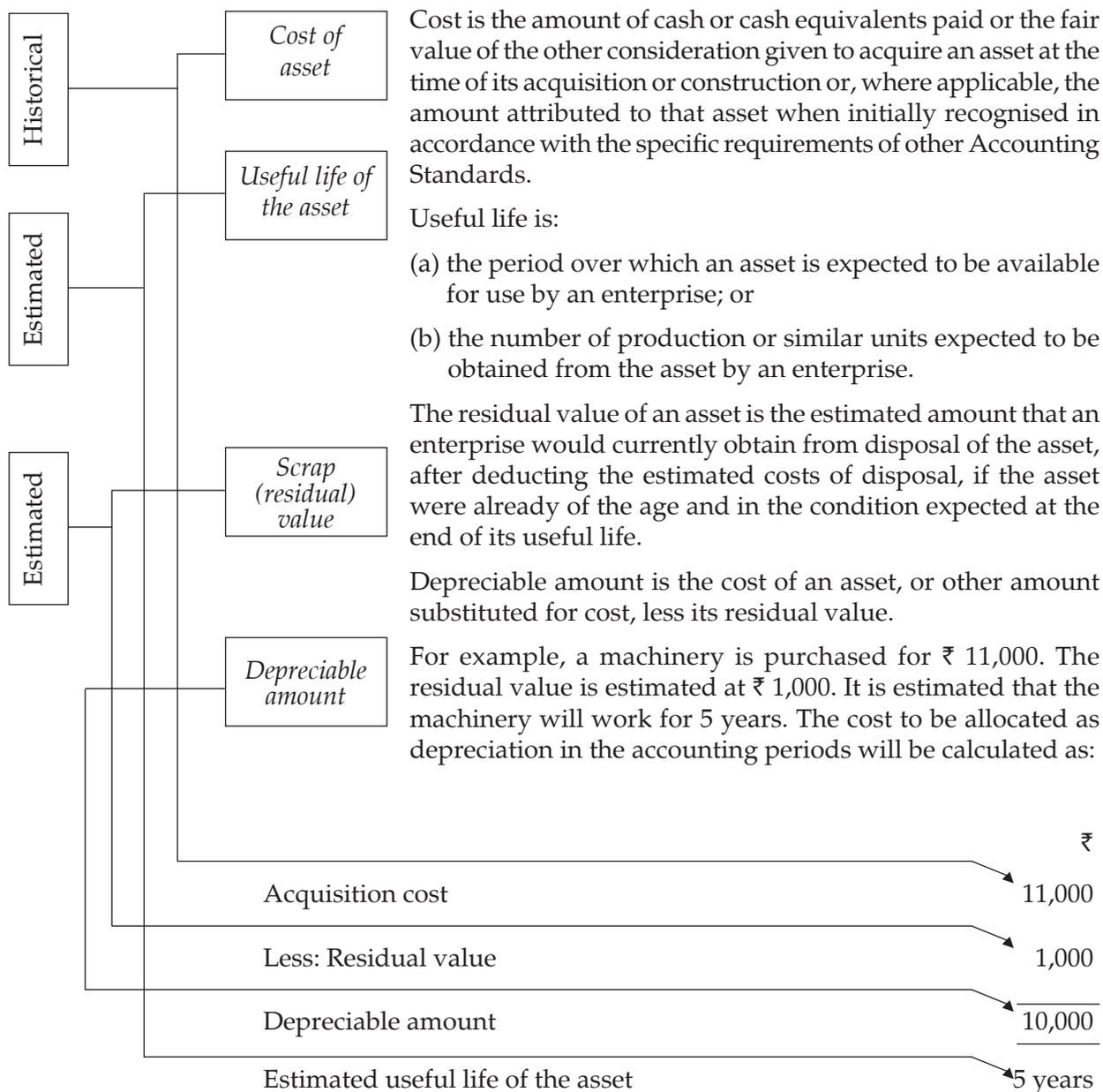
Estimation of exact amount of depreciation is not easy. Generally following factors are taken into consideration for calculation of depreciation.

1. Cost of asset including expenses for installation, commissioning, trial run etc.
2. Estimated useful life of the asset.
3. Estimated scrap value (if any) at the end of useful life of the asset.





The above mentioned factors can be explained, in detail, as follows:



$$\text{Depreciation} = \frac{\text{Depreciable Amount}}{\text{Estimated useful life}} \text{ i.e. } ₹ 10,000 / 5 \text{ years} = ₹ 2,000 \text{ per year}$$

As per Schedule II under the Companies Act, 2013, Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life. The depreciable amount of an asset is the cost of an asset or other amount substituted for cost, less its residual value. The useful life of an asset is the period over which an asset is expected to be available for use by an entity, or the number of production or similar units expected to be obtained from the asset by the entity.

3. METHODS FOR PROVIDING DEPRECIATION

Generally, methods for providing depreciation are based on formula, developed on a study of the behavior of the assets over a period of years for readily computing the amount of depreciation suffered by different forms of assets. Each of the methods, however, should be applied only after carefully considering nature of the asset and the conditions under which it is being used.

3.1 STRAIGHT LINE METHOD

According to this method, an equal amount is written off every year during the working life of an asset so as to reduce the cost of the asset to nil or its residual value at the end of its useful life. The advantage of this method is that it is simple to apply and gives accurate results especially in case of leases, and also in case of plant and machinery. Calculation of depreciation for additions to plant and machinery may be a complicated affair unless different classes of machines are classified separately in a plant register based on year of additions. This method is also known as Fixed Instalment Method.

$$\text{Straight Line Depreciation} = \frac{\text{Cost of Asset} - \text{Scrap Value}}{\text{Useful life}}$$

$$\text{Straight Line Depreciation Rate} = \frac{\text{Straight Line Depreciation}}{\text{Cost of Asset}} \times 100$$

The underlying assumption of this method is that the particular tangible asset generates equal utility during its lifetime. But this cannot be true under all circumstances. The expenditure incurred on repairs and maintenance will be low in earlier years, whereas the same will be high as the asset becomes old. Apart from this the asset may also have varying capacities over the years, indicating logic for unequal depreciation provision. However, many assets have insignificant repairs and maintenance expenditures for which straight line method can be applied.

3.2 REDUCING BALANCE METHOD

Under this system, a fixed percentage of the diminishing value of the asset is written off each year so as to reduce the asset to its break-up value at the end of its life, repairs and small renewals being charged to revenue. This method is commonly used for plant, fixtures, etc. Under this method, the annual charge for depreciation decreases from year to year, so that the earlier years suffer to the benefit of the later years. Also, under this method, the value of asset can never be completely extinguished, which happens in the earlier explained Straight Line Method. However, it is very simple to operate. The other advantage of this method is that the total charge to revenue is uniform when the depreciation is high, repairs are negligible; and as the repairs increase, the burden of depreciation gets lesser and lesser. On the other hand, under the Straight Line Method, the charge for depreciation is constant, while repairs tend to increase with the life of the asset. Among the disadvantages of this method is the danger that too low a percentage may be adopted as depreciation with the result that over the life of the asset full depreciation may not be provided; also if assets are grouped in such a way that individual assets are difficult to identify, the residue of an asset may lie in the asset account even after the asset has been scrapped. The last mentioned difficulty could be, however, over come if a Plant register is maintained.



The rate of depreciation under this method may be determined by the following formula:

$$1 - \sqrt[n]{\frac{\text{Residual Value}}{\text{Cost of asset}}} \times 100$$

where, n = useful life

Accounting Entries under Straight Line and Reducing Balance Methods:

There are two alternative approaches for recording accounting entries for depreciation.

First Alternative

A provision for depreciation account is opened to accumulate the balance of depreciation and the assets are carried at historical cost.

Accounting entry

Profit and Loss Account Dr.
 To Provision for Depreciation Account

Second Alternative

Amount of Depreciation is credited to the Asset Account every year and the Asset Account is carried at historical cost less depreciation.

Accounting entries:

Depreciation Account Dr.
 To Asset Account

Profit and Loss Account Dr.
 To Depreciation Account

ILLUSTRATION 1

Jain Bros. acquired a machine on 1st July, 2014 at a cost of ₹ 14,000 and spent ₹ 1,000 on its installation. The firm writes off depreciation at 10% p.a. of the original cost every year. The books are closed on 31st December every year.

Required

Show the Machinery Account and Depreciation Account for the year 2014 and 2015.

SOLUTION

As per Straight Line Method

DEPRECIATION ACCOUNTING

Machinery Account

Dr.		₹	2014		Cr.
2014					₹
July 1	To Bank A/c	14,000	Dec. 31	By Depreciation A/c	
July 1	To Bank A/c - Installation Expenses	1,000		10% on ₹ 15,000 for 6 months	750
			Dec. 31	By Balance c/d	14,250
		15,000			15,000
2015			2015		
Jan. 1	To Balance b/d	14,250	Dec. 31	By Depreciation A/c	
				10% on ₹ 15,000	1,500
			Dec. 31	By Balance c/d	12,750
		14,250			14,250

Depreciation Account

2014		₹	2014		₹
Dec. 31	To Machinery A/c	750	Dec. 31	By Profit & Loss A/c	750
2015			2015		
Dec. 31	To Machinery A/c	1,500	Dec. 31	By Profit & Loss A/c	1,500

ILLUSTRATION 2

Jain Bros. acquired a machine on 1st July, 2014 at a cost of ₹ 14,000 and spent ₹ 1,000 on its installation. The firm writes off depreciation at 10% p.a. every year. The books are closed on 31st December every year.

Required

Show the Machinery Account on diminishing balance method for the year 2014 and 2015.

SOLUTION

As per Reducing Balance Method

Machinery Account

2014		₹	2014		₹
July 1	To Bank A/c	14,000	Dec. 31	By Depreciation A/c	750
	To Bank A/c	1,000		(₹ 15,000 × 10% × 6/12)	
			Dec. 31	By Balance c/d	14,250
		15,000			15,000
2015			2015		
Jan. 1	To Balance b/d	14,250	Dec. 31	By Depreciation A/c	
				(₹ 14,250 × 10%)	1,425
			Dec. 31	By Balance c/d	12,825
		14,250			14,250



3.3 SUM OF YEARS OF DIGITS METHOD

It is variation of the “Reducing Balance Method”. In this case, the annual depreciation is calculated by multiplying the original cost of the asset less its estimated scrap value by the fraction represented by:

$$\frac{\text{The number of years (including the present year) of remaining life of the asset}}{\text{Total of all digits of the life of the asset (in years)}}$$

Suppose the estimated life of an asset is 10 years; the total of all the digits from 1 to 10 is 55 i.e., 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1, or by the formula:

$$\frac{n(n+1)}{2} = \frac{10 \times 11}{2} = 55$$

The depreciation to be written off in the first year will be 10/55 of the cost of the asset less estimated scrap value; and the depreciation for the second year will be 9/55 of the cost of asset less estimated scrap value and so on.

The method is not yet in vogue; and its advantages are the same as those of the Reducing Balance Method.

ILLUSTRATION 3

M/s Raj & Co. purchased a machine for ₹ 1,00,000. Estimated useful life and scrap value were 10 years and ₹ 12,000 respectively. The machine was put to use on 1.1.2010.

Required

Show Machinery Account and Depreciation Account in their books for 2015 by using sum of years digits method.

SOLUTION

In the books of M/s Raj & Co. Machinery Account

Dr.		₹	2015		Cr.
2015			2015		₹
Jan. 1	To Balance b/d (W.N.2)	36,000	Dec. 31	By Depreciation A/c (W.N.3)	8,000
			Dec. 31	By Balance c/d	28,000
		36,000			36,000
2016					
Jan.1	To Balance b/d	28,000			

Depreciation Account

2015		₹	2015		₹
Dec. 31	To Machinery A/c	8,000	Dec. 31	By Profit and Loss A/c	8,000
		8,000			8,000

Working Notes:

- (1) Total of sum of digit of depreciation for 2010-2014

$$\begin{aligned} &= (\text{₹ } 1,00,000 - \text{₹ } 12,000) \times \frac{10 + 9 + 8 + 7 + 6}{\frac{10(10 + 1)}{2}} \\ &= \text{₹ } 88,000 \times \frac{40}{55} = \text{₹ } 64,000 \end{aligned}$$

- (2) Written down value as on 1-1-2015

$$\text{₹ } 1,00,000 - \text{₹ } 64,000 = \text{₹ } 36,000$$

- (3) Depreciation for 2015

$$(\text{₹ } 1,00,000 - \text{₹ } 12,000) \times \frac{5}{55} = \text{₹ } 8,000.$$

3.4 ANNUITY METHOD

This is a method of depreciation which also takes into account the element of interest on capital outlay and seeks to write off the value of the asset as well as the interest lost over the life of the asset. It assumes that the amount laid out in acquiring asset, if invested elsewhere, would have earned interest which must be reckoned as part of the cost of asset. On that basis, the amount of depreciation to be annually provided in the accounts is ascertained from the Annuity Tables, to write off each year interest on the capital outlay as well as part of the capital sum at a rate that the whole of the capital sum and interest accruing thereon would be written off over the life of the asset. Though the amount written off annually is constant, the interest in the earlier years being greater, only small amount of the capital outlay is written off. This proportion is reversed with the passage of time. This method is eminently suitable for writing off the amounts paid for long leases which involve a considerable capital outlay. It is not practicable to adopt this method for writing off depreciation of plant and machinery on account of frequent changes in the value of such assets which would necessitate the recalculation of the amount of depreciation to be written off annually.

Relevant Journal entries are:

- (1) For charging interest on asset account

Asset Account	Dr.
To Interest Account	

- (2) For charging depreciation on asset

Depreciation Account	Dr.
To Asset Account	

- (3) For transferring depreciation to Profit and Loss Account

Profit and Loss Account	Dr.
To Depreciation Account	

- (4) For transferring interest to Profit and Loss Account

Interest Account	Dr.
To Profit and Loss Account	



ILLUSTRATION 4

A lease is purchased on 1st January, 2012 for 4 years at a cost of ₹ 20,000. It is proposed to depreciate the lease by the annuity method charging 5 percent interest. A reference to the annuity table shows that to depreciate ₹ 1 by annuity method over 4 years charging 5% interest, one must write off a sum of ₹ 0.282012 [To write off ₹ 20,000 one has to write off every year ₹ 5,640.24 i.e. $0.282012 \times 20,000$].

Required

Show the Lease Account for four years and also the relevant entries in the profit and loss account.

SOLUTION

Lease Account

Dr.		₹			Cr.
2012			2012		₹
Jan. 1	To Bank A/c	20,000.00	Dec. 31	By Depreciation A/c	5,640.24
Dec. 31	To Interest A/c (5% on ₹ 20,000)	1,000.00		By Balance c/d	15,359.76
		<u>21,000.00</u>			<u>21,000.00</u>
2013			2013		
Jan. 1	To Balance b/d	15,359.76	Dec. 31	By Depreciation A/c	5,640.24
Dec. 31	To Interest A/c (5% on ₹ 15,359.76)	767.99		By Balance c/d	10,487.51
		<u>16,127.75</u>			<u>16,127.75</u>
2014			2014		
Jan. 1	To Balance b/d	10,487.51	Dec. 31	By Depreciation A/c	5,640.24
Dec. 31	To Interest A/c	524.38	Dec. 31	By Balance c/d	5,371.65
		<u>11,011.89</u>			<u>11,011.89</u>
2015			2015		
Jan. 1	To Balance b/d	5,371.65	Dec. 31	By Depreciation A/c	5,640.24
Dec. 31	To Interest A/c	268.59			
		<u>5,640.24</u>			<u>5,640.24</u>

Profit and Loss Account

2012		₹	2012		₹
Dec. 31	To Depreciation A/c	5,640.24	Dec. 31	By Interest A/c	1,000.00
2013			2013		
Dec. 31	To Depreciation A/c	5,640.24	Dec. 31	By Interest A/c	767.99
2014			2014		
Dec. 31	To Depreciation A/c	5,640.24	Dec. 31	By Interest A/c	524.38
2015			2015		
Dec. 31	To Depreciation A/c	5,640.24	Dec. 31	By Interest A/c	268.59

3.5 SINKING FUND METHOD

If a large sum of money is required for replacement of property, plant and equipment at the end of its effective life, it may not be advisable to leave in the amount of depreciation set apart annually, for it may or may not be available in the form of the readily realisable assets to the concern at the time it is required. To safeguard this position, the amount annually provided for depreciation may be placed to the credit of the Sinking Fund Account, and at the same time an equivalent amount may be invested in Government securities. The interest on these securities, when received, would be re-invested and the amount thereof would be credited to the Sinking Fund Account. The amount of annual provision for depreciation in such a case is calculated after taking into account interest, that the amounts annually invested shall be earning over the period these will remain invested. When the asset is due for replacement, the securities are sold and the new asset is purchased with the proceeds of their sale. The book value of the old asset, at the time, is transferred to the Sinking Fund Account. Any amount realised on sale of the old asset, as well as the profit or loss on sale of securities, is transferred to the Sinking Fund Account and it is closed off by transfer of the balance of the Profit and Loss Account or General Reserve.

The amount to be set apart annually by way of depreciation is ascertained from Sinking Fund tables. They readily show the amount which must be invested each year to accumulate to ₹ 1 at a given rate of interest within the stated period.

Relevant Journal entries are:

- (1) For transfer of depreciation to Sinking Fund

Depreciation Account Dr.
 To Sinking Fund Account

- (2) For charging depreciation to profit and loss account

Profit and Loss Account Dr.
 To Depreciation Account



- (3) For investment of amount of depreciation
- | | |
|---------------------------------|-----|
| Sinking Fund Investment Account | Dr. |
| To Bank Account | |
- (4) In subsequent years, for interest earned on sinking fund investment and on investment of the interest and depreciation
- | | |
|--|-----|
| Bank Account | Dr. |
| To Interest on Sinking Fund Investment Account | |
| Interest on Sinking Fund Investment Account | Dr. |
| To Sinking Fund Account | |
- (In addition to these entries, entries (1) and (2) will also be passed in subsequent years for transfer of depreciation to sinking fund and for charging it to profit and loss account)
- | | |
|---------------------------------|-----|
| Sinking Fund Investment Account | Dr. |
| To Bank Account | |
- (yearly depreciation + interest earned)
- (5) For sale of sinking fund investment at the end of useful life of the asset
- | | |
|------------------------------------|-----|
| Bank Account | Dr. |
| To Sinking Fund Investment Account | |
- If sales is at a profit*
- | | |
|---------------------------------|-----|
| Sinking Fund Investment Account | Dr. |
| To Sinking Fund Account | |
- If sales is at loss*
- | | |
|------------------------------------|-----|
| Sinking Fund Account | Dr. |
| To Sinking Fund Investment Account | |
- (6) For transfer of the amount to the extent of book value of the asset from asset account to sinking fund account
- | | |
|----------------------|-----|
| Sinking Fund Account | Dr. |
| To Asset Account | |
- (7) Any surplus in Sinking Fund Account may be transferred to General Reserve Account and if any deficit, that may be transferred to Profit and Loss Account
- | | |
|----------------------------|-----|
| Sinking Fund Account | Dr. |
| To General Reserve Account | |
- OR
- | | |
|-------------------------|-----|
| Profit and Loss Account | Dr. |
| To Sinking Fund Account | |

The afore mentioned method may also be operated a little differently. The amount set apart on account of depreciation, instead of being invested annually in the purchase of government securities may be paid out as premium on a policy maturing at the end of the life of the asset, for an amount equal to the sum that will be required for its replacement. In that case the amount of the premium when paid will be debited to the Policy Account instead of the Investment Account.

ILLUSTRATION 5

On 1st April, 2013, Z Limited purchased the lease of property for ₹ 10,000. The lease would expire on 31st March, 2016. Z Ltd., decided to set up a sinking fund. The Sinking Fund was to be credited (or debited) with an annual contribution from profit, the interest on the investments and any profits (or losses) made on the realisation of the sinking fund investments. The sinking fund was to be represented by specific investment, and any sums made available to the sinking fund were to be immediately invested, except at the termination of the fund.

During the three years following transactions took place:

2014 31st March: A contribution from profits of ₹ 3,200 was made and this sum was invested.

2014 13th Oct.: Investments which originally costed ₹ 1,100 were sold for ₹ 1,200 and the proceeds of sale were re-invested.

2015 31st March: A contribution from profits of ₹ 3,200 was made; interest on investments of ₹ 160 was received and these amounts were re-invested.

2015 9th August: Investments which originally costed ₹ 2,100 were sold at a profit of ₹ 200 and proceeds of sale were re-invested.

2016 31st March: Interest on investments ₹ 480 was received which was not invested. All existing investments were sold for ₹ 6,600. A contribution from profit of an amount required to make up the sinking fund to ₹ 10,000 was made and this amount was not invested.

Required

Prepare Sinking Fund and Sinking Fund Investment Account for the years 2013-14, 2014-15, 2015-16.



SOLUTION

Sinking Fund Account

2014		₹	2014		₹
March 31	To Balance c/d	3,200	March 31	By Depreciation A/c	3,200
		<u>3,200</u>			<u>3,200</u>
2015			2015		
March 31	To Balance c/d	6,660	April 1	By Balance b/d	3,200
			Oct. 13	By S.F. Investment A/c	100
			March 31	By Interest on S.F. Investment A/c	160
				By Depreciation A/c	3,200
		<u>6,660</u>			<u>6,660</u>
2015			2015		
March 31	To S.F. Investment A/c	260	April 1	By Balance b/d	6,660
	To Lease A/c	10,000	August 9	By S.F. Investment A/c	200
			March 31	By Interest on S.F. Investment A/c	480
				By Depreciation A/c (Balancing Figure)	2,920
		<u>10,260</u>			<u>10,260</u>

Sinking Fund Investment Account

2014		₹	2014		₹
March 31	To Bank A/c	3,200	March 31	By Balance c/d	3,200
		<u>3,200</u>			<u>3,200</u>
2014			2014		
April 1	To Balance b/d	3,200	Oct. 13	By Bank (sale)	1,200
Oct. 13	To S.F. A/c (profit on sale)	100	March 31	By Balance c/d	6,660
Oct. 13	To Bank A/c (investment of sale proceed)	1,200			
2015					
March 31	To Bank A/c (investment of depreciation amount and interest)	3,360			
		<u>7,860</u>			<u>7,860</u>
2015			2015		
April 1	To Balance b/d	6,660	August 9	By Bank	2,300
August 9	To S.F. A/c (profit on sale)	200	2016	By Bank	
August 9	To Bank A/c (investment of sale proceeds)	2,300	March 31	By S.F. A/c (loss on sale)	6,600
		<u>9,160</u>			<u>260</u>
					<u>9,160</u>

ILLUSTRATION 6

On the basis of the data given in the illustration 5,

Required

Prepare Lease Account and Depreciation Account for the years 1st April, 2013 to 31st March, 2016.

SOLUTION

Lease Account

2013		₹	2014		₹
April 1	To Bank A/c	10,000	March 31	By Balance c/d	10,000
		<u>10,000</u>			<u>10,000</u>
2014			2015		
April 1	To Balance b/d	10,000	March 31	By Balance c/d	10,000
		<u>10,000</u>			<u>10,000</u>
2015			2016		
April 1	To Balance b/d	10,000	March 31	By Sinking Fund A/c	10,000
		<u>10,000</u>			<u>10,000</u>



Depreciation Account

2014		₹	2014		₹
March 31	To Sinking Fund A/c	3,200	March 31	By Profit & Loss A/c	3,200
		<u>3,200</u>			<u>3,200</u>
2015			2015		
March 31	To Sinking Fund A/c	3,200	March 31	By Profit & Loss A/c	3,200
		<u>3,200</u>			<u>3,200</u>
2016			2016		
March 31	To Sinking Fund A/c	2,920	March 31	By Profit & Loss A/c	2,920
		<u>2,920</u>			<u>2,920</u>

3.6 MACHINE HOUR METHOD

Where it is practicable to keep a record of the actual running hours of each machine, depreciation may be calculated on the basis of hours that the concerned machine worked. The machine hour rate of the depreciation, is calculated after estimating the total number of hours that machine would work during its whole life; however, it may have to be varied from time to time, on a consideration of the changes in the economic and technological conditions which might take place, to ensure that the amount provided for depreciation corresponds to that considered appropriate in the changed circumstances. It would be observed that the method is only a slight variation of the Straight Line Method under which depreciation is calculated per year. Under this method it is calculated for each hour the machine works.

ILLUSTRATION 7

A machine was purchased for ₹ 3,00,000 having an estimated total working of 24,000 hours. The scrap value is expected to be ₹ 20,000 and anticipated pattern of distribution of effective hours is as follows :

Year

1 – 3 3,000 hours per year

4 - 6 2,600 hours per year

7 - 10 1,800 hours per year

Required

Determine Annual Depreciation under Machine Hour Rate Method.

Statement of Annual Depreciation under Machine Hours Rate Method**SOLUTION**

Year	Annual Depreciation
1-3	$\frac{3,000}{24,000} \times (\text{₹ } 3,00,000 - \text{₹ } 20,000) = \text{₹ } 35,000$
4-7	$\frac{2,600}{24,000} \times (\text{₹ } 3,00,000 - \text{₹ } 20,000) = \text{₹ } 30,333$
8-10	$\frac{1,800}{24,000} \times (\text{₹ } 3,00,000 - \text{₹ } 20,000) = \text{₹ } 21,000$

3.7 PRODUCTION UNITS METHOD

Under this method depreciation of the asset is determined by comparing the annual production with the estimated total production. The amount of depreciation is computed by the use of following method:

$$\text{Depreciation for the period} = \frac{\text{Depreciable Amount} \times \text{Production during the period}}{\text{Estimated total production}}$$

The method is applicable to machines producing product of uniform specifications.

ILLUSTRATION 8

A machine is purchased for ₹ 2,00,000. Its estimated useful life is 10 years with a residual value of ₹ 20,000. The machine is expected to produce 1.5 lakh units during its life time. Expected distribution pattern of production is as follows:

Year	Production
1-3	20,000 units per year
4-7	15,000 units per year
8-10	10,000 units per year

Required

Determine the value of depreciation for each year using production units method.



SOLUTION

Statement showing Depreciation under Production Units Method

Year	Annual Depreciation
1-3	$\frac{20,000}{1,50,000} \times (\text{₹ } 2,00,000 - \text{₹ } 20,000) = \text{₹ } 24,000$
4-7	$\frac{15,000}{1,50,000} \times (\text{₹ } 2,00,000 - \text{₹ } 20,000) = \text{₹ } 18,000$
8-10	$\frac{10,000}{1,50,000} \times (\text{₹ } 2,00,000 - \text{₹ } 20,000) = \text{₹ } 12,000$

3.8 DEPLETION METHOD

This method is used in case of mines, quarries etc. containing only a certain quantity of product. The depreciation rate is calculated by dividing the cost of the asset by the estimated quantity of product likely to be available. Annual depreciation will be the quantity extracted multiplied by the rate per unit.

ILLUSTRATION 9

M/s Jay & Co. took lease of a quarry on 1-1-2013 for ₹ 1,00,00,000. As per technical estimate the total quantity of mineral deposit is 2,00,000 tonnes. Depreciation was charged on the basis of depletion method. Extraction pattern is given in the following table:

Year	Quantity of Mineral extracted
2013	2,000 tonnes
2014	10,000 tonnes
2015	15,000 tonnes

Required

Show the Quarry Lease Account and Depreciation Account for each year from 2013 to 2015.

DEPRECIATION ACCOUNTING

SOLUTION

Quarry Lease Account

<i>Dr.</i>		₹	2013		<i>Cr.</i>
2013					₹
Jan.	To Bank A/c	1,00,00,000	Dec. 31	By Depreciation A/c [(2,000/2,00,000) × ₹ 1,00,00,000]	1,00,000
			Dec. 31	By Balance c/d	99,00,000
		1,00,00,000			1,00,00,000
2014			2014		
Jan. 1	To Balance b/d	99,00,000	Dec. 31	By Depreciation A/c	5,00,000
			Dec. 31	By Balance c/d	94,00,000
		99,00,000			99,00,000
2015			2015		
Jan. 1	To Balance b/d	94,00,000	Dec. 31	By Depreciation A/c	7,50,000
			Dec. 31	By Balance c/d	86,50,00
		94,00,000			94,00,000

Depreciation Account

<i>Dr.</i>		₹	2013		<i>Cr.</i>
2013					₹
Dec. 31	To Quarry lease A/c	1,00,000	Dec. 31	By Profit & Loss A/c	1,00,000
		1,00,000			1,00,000
2014			2014		
Dec. 31	To Quarry lease A/c	5,00,000	Dec. 31	By Profit & Loss A/c	5,00,000
		5,00,000			5,00,000
2015			2015		
Dec. 31	To Quarry lease A/c	7,50,000	Dec. 31	By Profit & Loss A/c	7,50,000
		7,50,000			7,50,000



4. PROFIT OR LOSS ON THE SALE / DISPOSAL OF PROPERTY, PLANT AND EQUIPMENT

Whenever any depreciable asset is sold during the year, depreciation is charged on it for the period it has been used in the sale year. The written down value after charging such depreciation is used for calculating the profit or loss on the sale of that asset. The resulting profit or loss on sale of the asset is ultimately transferred to profit and loss account.

For example: The book value of the asset as on 1st January, 2015 is ₹ 50,000. Depreciation is charged on the asset @10%. On 1st July 2015, the asset is sold for ₹ 32,000. In such a situation, profit or loss on the sale will be calculated as follows:

	₹
Book value as on 1 st Jan., 2015	50,000
Less: Depreciation for 6 months @ 10% (from 1 st Jan., 2015 to 30 th June, 2015)	2,500
Written down value as on 1 st July, 2015	<u>47,500</u>
Less: Sale proceeds as on 1 st July, 2015	32,000
Loss on sale of the asset	<u>15,500</u>

ILLUSTRATION 10

A firm purchased on 1st January, 2014 certain machinery for ₹ 58,200 and spent ₹ 1,800 on its erection. On July 1, 2014 another machinery for ₹ 20,000 was acquired. On 1st July, 2015 the machinery purchased on 1st January, 2014 having become obsolete was auctioned for ₹ 38,600 and on the same date fresh machinery was purchased at a cost of ₹ 40,000.

Depreciation was provided for annually on 31st December at the rate of 10 per cent p.a. on written down value.

Required

Prepare machinery account.

DEPRECIATION ACCOUNTING

SOLUTION

Machinery Account

Dr. 2014		₹	2014		Cr. ₹
Jan. 1	To Bank A/c	58,200	Dec. 31	By Depreciation A/c	7,000
Jan. 1	To Bank A/c – erection charges	1,800		By Balance c/d	73,000
July 1	To Bank A/c	20,000			
		<u>80,000</u>			<u>80,000</u>
2015			2015		
Jan. 1	To Balance b/d	73,000	July 1	By Depreciation on sold machine	2,700
July 1	To Bank A/c	40,000		By Bank A/c	38,600
				By Profit and Loss A/c	12,700
			Dec. 31	By Depreciation A/c	3,900
				By Balance c/d	55,100
		<u>1,13,000</u>			<u>1,13,000</u>

Working Note:

Book Value of Machines

	Machine I ₹	Machine II ₹	Machine III ₹
Cost	60,000	20,000	40,000
Depreciation for 2014	<u>6,000</u>	<u>1,000</u>	
Written down value	54,000	19,000	
Depreciation for 2015	<u>2,700</u>	<u>1,900</u>	<u>2,000</u>
Written down value	51,300	17,100	38,000
Sale Proceeds	<u>38,600</u>		
Loss on Sale	12,700		

5. CHANGE IN THE METHOD OF DEPRECIATION

The depreciation method applied to an asset should be reviewed at least at each financial year-end and, if there has been a significant change in the expected pattern of consumption of the future economic benefits embodied in the asset, the method should be changed to reflect the changed pattern. Whenever any change in depreciation method is made, such change in method is treated as change in accounting estimate as per Accounting Standards. Its effect needs to be quantified and disclosed. A change in accounting estimate may affect the current period only or both the current period and future periods.



Example :

Cost of Machine	₹ 1,05,000
Residual Value	₹ 5,000
Useful life	10 years

The company charges depreciation on straight line method for the first two years and thereafter decides to adopt written down value method by charging depreciation @ 25% (calculated on the basis of useful life). You are required to calculate depreciation for the 3rd year.

Depreciation already charged for the first 2 years as per straight line method is ₹ 20,000. Therefore WDV at the end of the 2nd year is 85,000.

Therefore in the profit and loss account of the 3rd year, the depreciation of ₹ 21,250 (25% of 85,000) should be debited.

ILLUSTRATION 11

Messers Mill and Wright commenced business on 1st January 2011, when they purchased plant and equipment for ₹ 7,00,000. They adopted a policy of charging depreciation at 15% per annum on diminishing balance basis and over the years, their purchases of plant have been:

Date	Amount
	₹
1-1-2012	1,50,000
1-1-2015	2,00,000

On 1-1-2015 it was decided to change the method and rate of depreciation to straight line basis. On this date remaining useful life was assessed as 6 years for all the assets purchased before 1-1-2015 and 10 years for the asset purchased on 1-1-2015 with no scrap value.

Required

Calculate the depreciation to be adjusted in the Plant and Equipment Account for the year ending 31st December, 2015.

DEPRECIATION ACCOUNTING

SOLUTION

Depreciation on written down value basis

2011		Purchased on Jan. 1, 2011 ₹	Purchased on Jan. 1, 2012 ₹	Total Depreciation ₹
	Cost	7,00,000		
	Depreciation	1,05,000		1,05,000
	Written Down Value (WDV)	5,95,000		
2012	Cost		1,50,000	
	Depreciation	89,250	22,500	1,11,750
	W.D.V.	5,05,750	1,27,500	
2013	Depreciation	75,863	19,125	94,988
	W.D.V.	4,29,887	1,08,375	
2014	Depreciation	64,483	16,256	80,739
	W.D.V.	3,65,404	92,119	
2015	Depreciation	60,900	15,353	76,253
	W.D.V.	3,04,504	76,766	

Plant and Equipment Account

Dr. 2015		₹	2015		Cr. ₹
Jan. 1	To Balance b/d	4,57,523	Dec. 31	By Depreciation (60,900 + 15,353 + 20,000)	96,253
	To Bank	2,00,000		By Balance c/d	5,61,270
		6,57,523			6,57,523
2016					
Jan. 1	To Balance b/d	5,61,270			

6. REVISION OF THE ESTIMATED USEFUL LIFE OF PROPERTY, PLANT AND EQUIPMENT

The residual value and the useful life of an asset should be reviewed at least at each financial year-end and, if expectations differ from previous estimates, the change(s) should be accounted for as a change in an accounting estimate in accordance with Accounting Standards.



Whenever there is a revision in the estimated useful life of the asset, the unamortised depreciable amount should be charged to the asset over the revised remaining estimated useful life of the asset.

ILLUSTRATION 12

A computer costing ₹ 60,000 is depreciated on straight line basis, assuming 10 years working life and Nil residual value, for three years. The estimate of remaining useful life after third year was reassessed at 5 years. You are required to calculate depreciation for the fourth year.

SOLUTION

Depreciation per year = ₹ 60,000 / 10 = ₹ 6,000

Depreciation on SLM charged for three years = ₹ 6,000 × 3 years = ₹ 18,000

Book value of the computer at the end of third year = ₹ 60,000 – ₹ 18,000 = ₹ 42,000

Remaining useful life as per previous estimate = 7 years

Remaining useful life as per revised estimate = 5 years

Depreciation from the fourth year onwards = ₹ 42,000 / 5 = ₹ 8,400 per annum

7. REVALUATION OF PROPERTY, PLANT AND EQUIPMENT

If there is an upward revision in the value of asset for the first time, then the amount of appreciation is debited to Asset Account and credited to Revaluation Reserve Account. If an asset was earlier revalued downward and later on revalued upward then the appreciation to the extent of earlier downfall is credited to profit and loss account. If there is downward revision in the value of asset then Profit and Loss Account is debited and Asset Account is credited. If an asset was earlier revalued upward and then later on it was revalued downward then the downfall to the extent of earlier appreciation is debited to Revaluation Reserve Account. In case the revaluation has a material effect on the amount of depreciation, the same should be disclosed separately in the year in which revaluation is carried out.

ILLUSTRATION 13

A machine of cost ₹ 1,20,000 is depreciated straight-line assuming 10 year working life and zero residual value for three years. At the end of third year, the machine was revalued upwards by ₹ 6,000 the remaining useful life was reassessed at 9 years.

Required

Calculate depreciation for the fourth year.

SOLUTION

Depreciation per year charged for three years = ₹ 1,20,000 / 10 = ₹ 12,000

WDV of the machine at the end of third year = ₹ 1,20,000 – ₹ 12,000 × 3 = ₹ 84,000

Depreciable amount after revaluation = ₹ 84,000 + ₹ 6,000 = ₹ 90,000

Remaining useful life as per previous estimate = 7 years

Remaining useful life as per revised estimate = 9 years

Depreciation for the fourth year onwards = ₹ 90,000 / 9 = ₹ 10,000

8. PROVISION FOR REPAIRS AND RENEWALS

Expenditure incurred for repairs, renewals and maintenance on plant and machinery may vary over the years during the working life. Thus, for equalising the charge of repairs and renewals, sometimes a Provision for Repairs and Renewals Account is opened. Total of such expenses that may be incurred over the working life is estimated before hand. Average of this expenditure is debited to Profit and Loss Account and credited to Provision for Repairs and Renewals Account irrespective of actual expenses incurred. Every year Provision for Repairs and Renewals Account is debited and Repairs Account is credited for actual expenses incurred. The balance in provision for Repairs and Renewals Account is carried forward and in the end or on sale of the asset, the account is closed by transfer to the Asset Account for any balance left.

ILLUSTRATION 14

The following particulars are available from the books of a public company having a large fleet of vehicles:

	₹
Balance in Provision for Repairs and Renewals Account as on 31.3.2015	1,15,000
Actual repairs charged/incurred during the year ended	
31.3.2015	75,000
31.3.2016	32,000

The company makes an annual provision of ₹ 40,000 on repairs and renewals.

Required

Draw up the Provision for Repairs and Renewals Account for the years 2014-2015 and 2015-2016.

SOLUTION

Provision for Repairs and Renewal Account

Dr.		₹			Cr. ₹
31.3.2015	To Repairs A/c	75,000	1.4.2014	By Balance b/d	1,50,000
31.3.2015	To Balance c/d	1,15,000		(Balancing figure)	
		1,90,000	31.3.2015	By Profit and Loss A/c	40,000
					1,90,000
31.3.2016	To Repairs A/c	32,000	1.4.2015	By Balance b/d	1,15,000
31.3.2016	To Balance c/d	1,23,000	31.3.2016	By Profit and Loss A/c	40,000
		1,55,000			1,55,000
			1.4.2016	By Balance b/d	1,23,000



SELF EXAMINATION QUESTIONS

Pick up the correct answer from the given choices:

- Original cost = ₹ 1,26,000; Salvage value = Nil; Useful life = 6 years. Depreciation for the first year under sum of years digits method will be
(a) ₹3 6,000 (b) ₹ 12,000 (c) ₹ 18,000 (d) ₹10,000
- Obsolescence of a depreciable asset may be caused by
 - Technological changes.
 - Improvement in production method.
 - Change in market demand for the product or service output.
 - Legal or other restrictions.
 - Only (I) above
 - Both (I) and (II) above
 - All (I), (II), (III) and (IV) above
 - Only (IV) above
- The number of production of similar units expected to be obtained from the use of an asset by an enterprise is called as
(a) Unit life (b) Useful life (c) Production life (d) Expected life
- If a concern proposes to discontinue its business from March 2015 and decides to dispose of all its plants within a period of 4 months, the Balance Sheet as on March 31, 2015 should indicate the plants at their
 - Historical cost
 - Net realizable value
 - Cost less depreciation
 - Cost price or market value, whichever is lower
- In the case of downward revaluation of a plant which is for the first time revalued, the account to be debited is
 - Plant account
 - Revaluation Reserve
 - Profit & Loss account
 - General reserve

DEPRECIATION ACCOUNTING

6. The portion of the acquisition cost of the tangible asset, yet to be allocated is known as
- (a) Written down value
 - (b) Accumulated value
 - (c) Realisable value
 - (d) Salvage value

ANSWERS

- | | | | | |
|--------|--------|--------|--------|--------|
| 1. (a) | 2. (c) | 3. (b) | 4. (b) | 5. (c) |
| 6. (a) | | | | |