



# CONCEPT AND ACCOUNTING OF DEPRECIATION



## LEARNING OUTCOMES

**After studying this chapter, you will be able to:**

- ◆ Understand the meaning and nature of depreciation.
- ◆ Understand how to 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.
- ◆ Understand how 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.
- ◆ Familiarize with the accounting treatment for change in estimated useful life and residual value of property, plant and equipment.

## CHAPTER OVERVIEW

### Objectives of providing depreciation

To ascertain true results of operations

To present true and fair view of the financial position

To accumulate funds for the replacement of assets

To ascertain true cost of production

### Factors affecting the amount of depreciation

Cost of asset

Expected useful life

Estimated residual value



## 1. INTRODUCTION

### 1.1 Concept of Depreciation

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 are also called fixed assets in common parlance. When a fixed asset is purchased, it is recorded in books of account at its original or acquisition/purchase cost. However fixed assets are used to earn revenues for a number of accounting periods in future with the same acquisition cost until the concerned fixed asset is sold or discarded. It is therefore necessary that a part of the acquisition cost of the fixed assets is treated or allocated as an expense in each of the accounting period in which the asset is utilized. The amount or value of fixed assets allocated in such manner to respective accounting period is called depreciation. Value of such assets decreases with passage of time mainly due to following reasons.

1. Wear and tear due to its use in business
2. Efflux of time even when it is not being used
3. Obsolescence due to technological or other changes
4. Decrease in market value
5. Depletion mainly in case of mines and other natural reserves

It is important to account for value of portion of property, plant and equipment utilized for generating revenue during an accounting year to ascertain true income. This portion of cost of Property, Plant & Equipment allocated to an accounting year is called depreciation.

**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.**

Thus there are 3 important factors for computing depreciation:

- Estimated useful life of the asset
- Cost of the asset
- Residual value of the asset at the end of the of its estimated useful life

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. Thus it is not necessary that an asset must be used to be depreciated. There is decrease in value of assets due to normal wear and tear even when these are not physically used. Accordingly, value of such wear and tear should be estimated and accounted for.

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 Depreciation on components of an assets

It may be noted that Accounting Standards as well as the Companies Act, 2013 requires 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/components and should depreciate each such part separately based on the useful life and residual value of each particular component. For Example- Aircraft is a classic example of such an asset. The airframe (i.e. the body of the aircraft), the engines and the interiors have different individual useful lives. If the life of the airframe (being the longest of the individual lives of the three major types of components) is taken as the life of the aircraft, it is important that other two major components i.e. engine and interiors are depreciated over their respective useful life and not over the life of airframe. Other components (usually small and low value) which will require replacement very frequently may be depreciated over the useful life of airframe and their frequent replacement cost may be charged to expense as and when it is incurred.

Here it is important to note that a part of Property, Plant & Equipment to be identified as a separate component should have both

- (a) significant cost when compared to overall cost of item of property, plant and equipment and
- (b) and estimated useful life or depreciation method different from rest of the parts of the property plant and equipment.

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.

### 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. In case an enterprise does not account for depreciation on Property, Plant & Equipment, it will not be considering loss in value of property, plant & equipment due to their use in production or operations of the enterprise and will not result in true profit or loss for the period.
- (2) *True position statement:* Value of the Property, Plant & Equipment should be adjusted for depreciation

charged in order to depict the actual financial position. In case depreciation is not accounted for appropriately, the property, plant and equipment would be disclosed in financial statements at a value higher than their true value.

- (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. Depreciation is a good indication of the amount an enterprise should set aside to replace a fixed asset after its economic useful life is over. However, the replacement cost of a fixed asset may be impacted by inflation or other technological changes.
- (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.

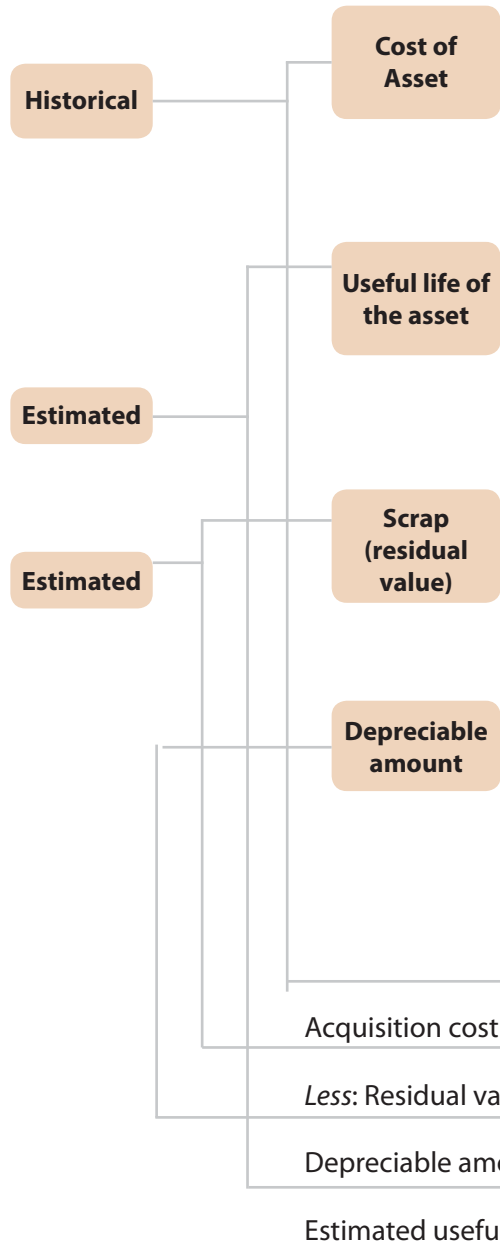


## 2. FACTORS IN THE MEASUREMENT OF DEPRECIATION

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:



Cost of a depreciable asset represents its money outlay or its equivalent in connection with its acquisition, installation and commissioning as well as for additions to or improvement thereof for the purpose of increase in efficiency. We have discussed this in more detail in coming paragraphs.

'Useful Life' is either (i) the period over which a depreciable asset is expected to be used by the enterprise or (ii) the number of production or similar units expected to be obtained from the use of the asset by the enterprise. Determination of the useful life is a matter of estimation and is normally based on various factors including experience with similar type of assets. Several other factors like estimated working hours, production capacity, repairs and renewals, etc. are also taken into consideration on demanding situation.

Determination of the residual value is normally a difficult matter. If such value is considered as insignificant, it is normally regarded as nil. On the other hand, if the residual value is likely to be significant, it is estimated at the time of acquisition/ installation, or at the time of subsequent revaluation of asset.

Depreciable amount of a depreciable asset is its historical cost, or other amount substituted for historical cost in the financial statements, less the estimated residual value.

For example, a machinery is purchased for ₹ 1,10,000. The residual value is estimated at ₹ 10,000. It is estimated that the machinery will work for 5 years. The cost to be allocated as depreciation in the accounting periods will be calculated as:

	₹
Acquisition cost	1,10,000
Less: Residual value	(10,000)
Depreciable amount	1,00,000
Estimated useful life of the asset	5 years

$$\text{Depreciation} = \frac{\text{Depreciable amount}}{\text{Estimated useful life}} \text{ i.e. } ₹ 1,00,000 / 5 = ₹ 20,000 \text{ per year}$$

**Cost of Property, Plant and Equipment comprises:**

- (a) its purchase price, including non-refundable import duties and purchase taxes, after deducting trade discounts and rebates.
- (b) any cost directly attributable to bring the asset to the location and condition necessary for it to be capable of operating in a manner intended by the enterprise.
- (c) the initial estimate of the costs of dismantling, removing, the item and restoring the site on which an asset is located.

Examples of costs directly attributable costs are:

- (a) cost of employee benefits arising directly from acquisition or construction of an item of property, plant and equipment.
- (b) cost of site preparation
- (c) initial delivery and handling costs
- (d) installation and assembly costs
- (e) cost of testing whether the asset is functioning properly, after deducting the net proceeds from selling the items produced while testing (such as samples produced while testing)
- (f) professional fees e.g. engineers hired for helping in installation of a machine

Thus all the expenses which are necessary for asset to bring it in condition and location of desired used will become part of cost of the asset. However, following expenses should not become part of cost of asset:

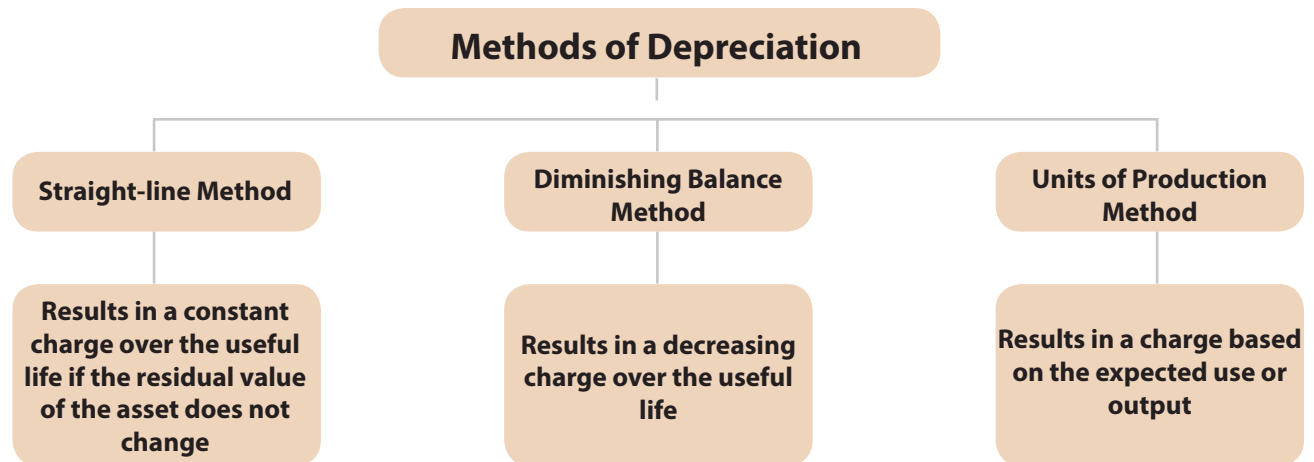
- (a) costs of opening new facility or business, such as inauguration costs;
- (b) cost of introducing new product or service (for example cost of advertisement or promotional activities).
- (c) cost of conducting business in a new location or with a new class of customer (including cost of staff training); and
- (d) administration and other general overhead costs.

Once an asset has been brought to its intended condition and location of use, no cost should recognized as part of cost of the asset unless there is major repair or addition which increases the useful life of the asset or improves the production capacity of the asset. Accordingly, cost incurred while and item is capable of operating in intended manner but it is not yet put to use or is used at less than full capacity should not be capitalized as part of cost of the asset. Similarly, cost of relocation of an asset should not be capitalized.

Any additions made to a particular item of property, plant and equipment after it is initially put to use are depreciated over the remaining useful life of the asset. Therefore, it is important to maintain an asset register capturing asset wise details of cost, rate of depreciation, date of capitalization etc. All these details need to be captured for any additions to existing assets as well. In the absence of the adequate information, it will be very difficult to compute depreciation expense year on year. Also, at the time of disposal or discard of a particular asset, it will not be possible to compute gain or loss on such disposal/discard.

### 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.



The Income Tax Rules, however, prescribe the Diminishing Balance Method except in the case of assets of an undertaking engaged in generation and distribution of power.

#### 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. This method is also known as Fixed Instalment Method.

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

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

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.

While using this method the period of use of an asset in a particular year should also be considered. In the year of purchase of an asset it may have been available for use for part of the year only, accordingly depreciation should be proportioned to reflect the period for which it was available for use. For example, if an asset was purchased on March 1, 2017 and the enterprise prepares financial statements for the year ending on March 31, 2017 depreciation will be provided for a period of 1 month only. Similar situation will arise in the year in which an asset is retired from its intended use or is sold. However, under income tax rules depreciation is provided for full year if the asset was used for more than 180 days in a particular financial year.

### 3.2 Reducing or Diminishing 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 residual value at the end of its life. Repairs and small renewals are 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. This method is based on the assumption that cost of repairs will increase as the asset gets old, therefore, depreciation in earlier years should be high when the repair cost is expected to be low and depreciation in later years should be low when the repair cost is expected to be high. Therefore, this method will result in almost equal burden in all the years of use of the asset as depreciation will reduce with increase in repair costs will increase with every passing year. 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, overcome 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

Similar to straight line method, in this method also period of use in a particular year e.g. year of purchase or sale an item of property plant and equipment needs to be considered while computing the depreciation amount.

#### 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

Depreciation Account	Dr.
To Provision for Depreciation Account	



Profit and Loss Account Dr.  
 To 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, 2015 at a cost of ₹ 14,00,000 and spent ₹ 1,00,000 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 2015 and 2016.

**Machinery Account**

		₹			₹
2015			2015		
July 1	To Bank A/c	14,00,000	Dec. 31	By Depreciation A/c	
July 1	To Bank A/c - Installation Expenses	1,00,000		10% on ₹ 15,00,000 for 6 months	75,000
		15,00,000	Dec. 31	By Balance c/d	14,25,000
					15,00,000
2016			2016		
Jan. 1	To Balance b/d	14,25,000	Dec. 31	By Depreciation A/c	
				10% on ₹ 15,00,000	1,50,000
		14,25,000	Dec. 31	By Balance c/d	12,75,000
					14,25,000

**Depreciation Account**

		₹			₹
2015			2015		
Dec. 31	To Machinery A/c	75,000	Dec. 31	By Profit & Loss A/c	75,000
2016			2016		
Dec. 31	To Machinery A/c	1,50,000	Dec. 31	By Profit & Loss A/c	1,50,000

### ILLUSTRATION 2

Jain Bros. acquired a machine on 1st July, 2015 at a cost of ₹ 14,00,000 and spent ₹ 1,00,000 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 2015 and 2016.

### SOLUTION

As per Reducing Balance Method

<b>Machinery Account</b>					
		₹			₹
2015			2015		
July 1	To Bank A/c	14,00,000	Dec. 31	By Depreciation A/c	75,000
July 1	To Bank A/c -	1,00,000		(₹ 15,00,000 x 10% x 6/12) for	
				6 months	
			Dec. 31	By Balance c/d	14,25,000
		15,00,000			15,00,000
2016			2016		
Jan. 1	To Balance b/d	14,25,000	Dec. 31	By Depreciation A/c	1,42,500
				(₹ 14,25,000 x 10%)	
			Dec. 31	By Balance c/d	12,82,500
		14,25,000			14,25,000

### 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:

The number of years (including the present year) of remaining life of the asset

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 Akash purchased a machine for ₹ 10,00,000. Estimated useful life and scrap value were 10 years and ₹ 1,20,000 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 Akash  
Machinery Account**

		₹			₹
2015			2015		
Jan. 1	To Balance b/d (w.n.2)	3,60,000	Dec. 31	By Depreciation A/c (w.n.3)	80,000
			Dec. 31	By Balance c/d	2,80,000
		3,60,000			3,60,000
2016					
Jan.1	To Balance b/d	2,80,000			

**Depreciation Account**

		₹			₹
2015			2015		
Dec. 31	To Machinery A/c	80,000	Dec. 31	By Profit and Loss A/c	80,000
		80,000			80,000

**Working Notes:**

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

$$= (\text{₹ } 10,00,000 - \text{₹ } 1,20,000) \times \frac{10 + 9 + 8 + 7 + 6}{10(10 + 1)}$$

$$= \text{₹ } 8,80,000 \times \frac{40}{55} = \text{₹ } 6,40,000$$

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

$$\text{₹ } 10,00,000 - \text{₹ } 6,40,000 = \text{₹ } 3,60,000$$

(3) **Depreciation for 2015**

$$(\text{₹ } 10,00,000 - \text{₹ } 1,20,000) \times \frac{5}{55} = \text{₹ } 80,000.$$

### 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 or Provision for Depreciation 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 April, 2012 for 4 years at a cost of ₹ 2,00,000. 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 ₹ 2,00,000 one has to write off every year ₹ 56,402.40 i.e.  $0.282012 \times 2,00,000$ ].*

#### Required

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

 SOLUTION

**Lease Account**

			₹				₹
2012-13				2012-13			
April. 1	To Bank A/c		2,00,000.00	Mar. 31	By Depreciation A/c		56,402.40
Mar. 31	To Interest A/c (5% on ₹ 2,00,000)		10,000.00		By Balance c/d		1,53,597.60
			2,10,000.00				2,10,000.00
2013-14				2013-14			
April. 1	To Balance b/d		1,53,597.60	Mar..31	By Depreciation A/c		56,402.40
Mar. 31	To Interest A/c (5% on ₹ 1,53,597.60)		7,679.88		By Balance c/d		1,04,875.08
			1,61,277.48				1,61,277.48
2014-15				2014-15			
April. 1	To Balance b/d		1,04,875.08	Mar. 31	By Depreciation A/c		56,402.40
Mar. 31	To Interest A/c		5,243.75	Mar. 31	By Balance c/d		53,716.43
			1,10,118.83				1,10,118.83
2015-16				2015-16			
April. 1	To Balance b/d		53,716.43	Mar. 31	By Depreciation A/c		56,402.25
Mar. 31	To Interest A/c		2,685.82				
			56,402.25				56,402.25

**Profit and Loss Account**

			₹				₹
2012-13				2012-13			
Mar. 31	To Depreciation A/c		56,402.40	Mar. 31	By Interest A/c		10,000.00
2013-14				2013-14			
mar. 31	To Depreciation A/c		56,402.40	Mar. 31	By Interest A/c		7,679.88
2014-15				2014-15			
Mar. 31	To Depreciation A/c		56,402.40	Mar. 31	By Interest A/c		5,243.75
2015-16				2015-16			
Mar. 31	To Depreciation A/c		56,402.40	Mar. 31	By Interest A/c		2,685.82

**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 enterprise 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 (S.F.) 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 aforementioned 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 ₹ 10,00,000. 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 31<sup>st</sup> March: A contribution from profits of ₹ 3,20,000 was made and this sum was invested.*

*2014 13<sup>th</sup> Oct.: Investments which originally costed ₹ 1,10,000 were sold for ₹ 1,20,000 and the proceeds of sale were re-invested.*

*2015 31<sup>st</sup> March: A contribution from profits of ₹ 3,20,000 was made; interest on investments of ₹ 16,000 was received and these amounts were reinvested.*

*2015 9<sup>th</sup> August: Investments which originally costed ₹ 2,10,000 were sold at a profit of ₹ 20,000 and proceeds of sale were re-invested.*

*2016 31<sup>st</sup> March: Interest on investments ₹ 48,000 was received which was not invested. All existing investments were sold for ₹ 6,60,000. A contribution from profit of an amount required to make up the sinking fund to ₹ 10,00,000 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	3,20,000	March 31	By Depreciation A/c	3,20,000
		3,20,000			3,20,000
2015			2015		
March 31	To Balance c/d	6,66,000	April 1	By Balance b/d	3,20,000
			Oct. 13	By S.F. Investment A/c	10,000
			March 31	By Interest on S.F. Investment A/c	16,000
				By Depreciation A/c	3,20,000
		6,66,000			6,66,000
2015			2015		
March 31	To S.F. Investment A/c	26,000	April 1	By Balance b/d	6,66,000
	To Lease A/c	10,00,000	August 9	By S.F. Investment A/c	20,000
			March 31, 2016	By Interest on S.F. Investment A/c	48,000
				By Depreciation A/c	2,92,000
				(Balancing Figure)	
		10,26,000			10,26,000

**Sinking Fund Investment Account**

		₹			₹
2014			2014		
March 31	To Bank A/c	3,20,000	March 31	By Balance c/d	3,20,000
		3,20,000			3,20,000
2014			2014		
April 1	To Balance b/d	3,20,000	Oct. 13	By Bank A/c (sale)	1,20,000
Oct. 13	To S.F.A/c	10,000	March 31	By Balance c/d	6,66,000
	(profit on sale)				
Oct. 13	To Bank A/c	1,20,000			
	(investment of sale proceed)				
2015					
March 31	To Bank A/c	3,36,000			
	(investment of depreciation amount and interest)				
		7,86,000			7,86,000
2015			2015		
April 1	To Balance b/d	6,66,000	August 9	By Bank A/c	2,30,000



August 9	To S.F. A/c (profit on sale)	20,000	2016 March 31	By Bank A/c By S.F. A/c (loss on sale)	6,60,000 26,000
August 9	To Bank A/c (investment of sale proceeds)	2,30,000			
		9,16,000			9,16,000

 **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 April 1	To Bank A/c	10,00,000	2014 March 31	By Balance c/d	10,00,000
		10,00,000			10,00,000
2014 April 1	To Balance b/d	10,00,000	2015 March 31	By Balance c/d	10,00,000
		10,00,000			10,00,000
2015 April 1	To Balance b/d	10,00,000	2016 March 31	By Sinking Fund A/c	10,00,000
		10,00,000			10,00,000

**Depreciation Account**

		₹			₹
2014 March 31	To Sinking Fund A/c	3,20,000	2014 March 31	By Profit & Loss A/c	3,20,000
		3,20,000			3,20,000
2015 March 31	To Sinking Fund A/c	3,20,000	2015 March 31	By Profit & Loss A/c	3,20,000
		3,20,000			3,20,000
2016 March 31	To Sinking Fund A/c	2,92,000	2016 March 31	By Profit & Loss A/c	2,92,000
		2,92,000			2,92,000

**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.

Schedule II to the Companies Act 2013, prescribes estimated useful life of different assets for companies, also recognizes this method to some extent. It prescribes that depreciation should be charged using estimate useful life suggested in it, however, in certain category of plant and machinery it prescribes to charge higher amount of depreciation if these assets are used for 2 shifts or 3 shifts. In a way, schedule II combines straight line method and machine hour method.



### ILLUSTRATION 7

A machine was purchased for ₹ 30,00,000 having an estimated total working of 24,000 hours. The scrap value is expected to be ₹ 2,00,000 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.



### SOLUTION

#### Statement of Annual Depreciation under Machine Hours Rate Method

Year	Annual Depreciation
1 - 3	$\frac{3,000}{24,000} \times (\text{₹ } 30,00,000 - \text{₹ } 2,00,000) = \text{₹ } 3,50,000$
4 - 6	$\frac{2,600}{24,000} \times (\text{₹ } 30,00,000 - \text{₹ } 2,00,000) = \text{₹ } 3,03,333$
7 - 10	$\frac{1,800}{24,000} \times (\text{₹ } 30,00,000 - \text{₹ } 2,00,000) = \text{₹ } 2,10,000$

### 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:

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

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

### ILLUSTRATION 8

A machine is purchased for ₹ 20,00,000. Its estimated useful life is 10 years with a residual value of ₹ 2,00,000. 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	$\frac{20,000}{1,50,000} \times (\text{₹ } 20,00,000 - \text{₹ } 2,00,000) = \text{₹ } 2,40,000$
4-7	$\frac{15,000}{1,50,000} \times (\text{₹ } 20,00,000 - \text{₹ } 2,00,000) = \text{₹ } 1,80,000$
8-10	$\frac{10,000}{1,50,000} \times (\text{₹ } 20,00,000 - \text{₹ } 2,00,000) = \text{₹ } 1,20,000$

### 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 Surya 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.

**SOLUTION****Quarry Lease Account**

		₹			₹
2013			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	86,50,000
		94,00,000			94,00,000

**Depreciation Account**

		₹			₹
2013			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 ₹ 50,00,000. Depreciation is charged on the asset @10%. On 1st July 2015, the asset is sold for ₹ 32,00,000. In such a situation, profit or loss on the sale will be calculated as follows:

	₹
Book value as on 1st Jan., 2015	50,00,000
Less: Depreciation for 6 months @10% (from 1st Jan., 2015 to 30th June, 2015)	(2,50,000)
Written down value as on 1st July, 2015	47,50,000
Less: Sale proceeds as on 1st July, 2015	(32,00,000)
Loss on sale of the asset	15,50,000

**ILLUSTRATION 10**

A firm purchased on 1st January, 2015 certain machinery for ₹ 5,82,000 and spent ₹ 18,000 on its erection. On July 1, 2015 another machinery for ₹ 2,00,000 was acquired. On 1st July, 2016 the machinery purchased on 1st January, 2015 having become obsolete was auctioned for ₹ 3,86,000 and on the same date fresh machinery was purchased at a cost of ₹ 4,00,000.

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.

**SOLUTION**

**Machinery Account**

		₹			₹
2015			2015		₹
Jan. 1	To Bank A/c	5,82,000	Dec. 31	By Depreciation A/c	70,000
Jan. 1	To Bank A/c – erection charges	18,000		By Balance c/d	7,30,000
July 1	To Bank A/c	2,00,000			
		8,00,000			8,00,000
2016			2016		
Jan. 1	To Balance b/d	7,30,000	July 1	By Depreciation on sold machine	27,000
July 1	To Bank A/c	4,00,000		By Bank A/c	3,86,000
				By Profit and Loss A/c	1,27,000
			Dec. 31	By Depreciation A/c	39,000
				By Balance c/d	5,51,000
		11,30,000			11,30,000

**Working Note:**

**Book Value of Machines**

	Machine I ₹	Machine II ₹	Machine III ₹
Cost	6,00,000	2,00,000	4,00,000
Depreciation for 2015	(60,000)	(10,000)	

Written down value	5,40,000	1,90,000	
Depreciation for 2016	(27,000)	(19,000)	(20,000)
Written down value	5,13,000	1,71,000	3,80,000
Sale Proceeds	(3,86,000)		
Loss on Sale	1,27,000		

## 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 an accounting estimate may affect the current period only or both the current period and future periods.

### Example :

Cost of Machine	₹ 10,50,000
Residual Value	₹ 50,000
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 based on 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 ₹ 2,00,000. Therefore, WDV for 2nd year is ₹ 8,50,000

Therefore in the profit and loss account of the 3rd year, the depreciation of ₹ 2,12,500 (25% of ₹ 850,000) should be debited.

### ILLUSTRATION 11

M/s Anshul 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 difference in depreciation to be adjusted in the Plant and Equipment Account for the year ending 31st December, 2015.

 **SOLUTION**
**Depreciation on written down value basis**

		Purchased on Jan. 1, 2011 ₹	Purchased on Jan. 1, 2012 ₹	Total Depreciation ₹
2011	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**

		₹			₹
2015 Jan. 1	To Balance b/d	4,57,523	2015 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 over the revised remaining estimated useful life of the asset.

### ILLUSTRATION 12

*A Machine costing ₹ 6,00,000 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.*

#### **Required**

*Calculate depreciation for the fourth year.*

### SOLUTION

Depreciation per year = ₹ 6,00,000 / 10 = ₹ 60,000

Depreciation on SLM charged for three years = ₹ 60,000 x 3 years = ₹ 1,80,000

Book value of the computer at the end of third year = ₹ 6,00,000 – ₹ 1,80,000 = ₹ 4,20,000.

Remaining useful life as per previous estimate = 7 years

Remaining useful life as per revised estimate = 5 years

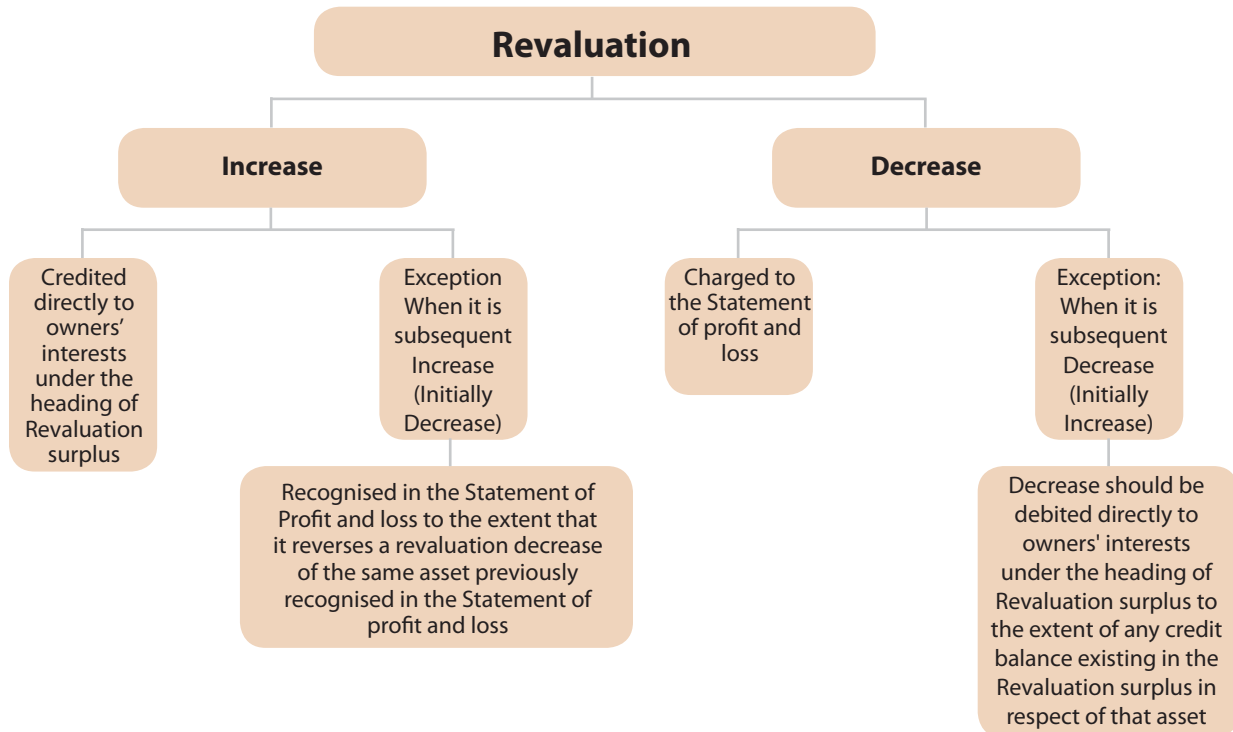
Depreciation from the fourth year onwards = ₹ 4,20,000 / 5 = ₹ 84,000 per annum

In case the entity would have continued with estimate of 7 years of remaining useful life, depreciation for 4th year would have been ₹ 64,000.

## 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 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 downward and later on revalued upward then the appreciation to the extent of earlier downfall is credited to profit and loss account. 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 ₹ 12,00,000 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 ₹ 60,000 the remaining useful life was reassessed at 9 years.

**Required**

Calculate depreciation for the fourth year.

 **SOLUTION**

Depreciation per year charged for three years = ₹ 12,00,000 / 10 = ₹ 1,20,000

WDV of the machine at the end of third year = ₹ 12,00,000 – ₹ 1,20,000 × 3 = ₹ 8,40,000.

Depreciable amount after revaluation = ₹ 8,40,000 + ₹ 60,000 = ₹ 9,00,000

Remaining useful life as per previous estimate = 7 years

Remaining useful life as per revised estimate = 9 years

Depreciation for the fourth year onwards = ₹ 9,00,000 / 9 = ₹1,00,000.

## 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 beforehand. 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 31.3.2016	11,50,000
Actual repairs charged/incurred during the year ended	
31.3.2016	7,50,000
31.3.2017	3,20,000

The company makes an annual provision of ₹ 4,00,000 on repairs and renewals.

### Required

Draw up the Provision for Repairs and Renewals Account for the years 2015-2016 and 2016-2017.

### SOLUTION

#### Provision for Repairs and Renewal Account

		₹			₹
31.3.2016	To Repairs A/c	7,50,000	1.4.2015	By Balance b/d	15,00,000
31.3.2016	To Balance c/d	11,50,000		(Balancing figure)	
		19,00,000	31.3.2016	By Profit and Loss A/c	4,00,000
		19,00,000			19,00,000
31.3.2017	To Repairs A/c	3,20,000	1.4.2016	By Balance b/d	11,50,000
31.3.2017	To Balance c/d	12,30,000	31.3.2017	By Profit and Loss A/c	4,00,000
		15,50,000			15,50,000
		15,50,000	1.4.2017	By Balance b/d	12,30,000



## SUMMARY

- ◆ Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life.
- ◆ Objectives for providing depreciation are:
  - ✦ Correct income measurement
  - ✦ True position statement
  - ✦ Funds for replacement
  - ✦ Ascertainment of true cost of production.
- ◆ Factors in the measurement of depreciation:
  - ✦ Cost of asset
  - ✦ Estimated useful life of the asset
  - ✦ Estimated scrap value (if any) at the end of useful life of the asset.
- ◆ Methods for providing depreciation:
  - ✦ Straight line method
  - ✦ Reducing balance method
  - ✦ Sum of years of digits method
  - ✦ Annuity method
  - ✦ Sinking fund method
  - ✦ Machine hour method
  - ✦ Production units' method
  - ✦ Depletion method
- ◆ The resulting profit or loss on sale of the tangible asset is ultimately transferred to profit and loss account.
- ◆ The depreciation method residual value & useful life 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, on account of the above, they should be changed to reflect the changed pattern.
- ◆ 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.
- ◆ Whenever the depreciable asset is revalued, the depreciation should be charged on the revalued amount on the basis of the remaining estimated useful life of the asset.

 **TEST YOUR KNOWLEDGE****Multiple Choice Questions**

- Original cost = ₹ 12,60,000; Salvage value = Nil; Useful life = 6 years. Depreciation for the first year under sum of years digits method will be  
(a) ₹ 3,60,000                      (b) ₹ 1,20,000                      (c) ₹ 1,80,000
- 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.(a) Only (I) above  
(b) Both (I) and (II) above  
(c) All (I), (II), (III) and (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
- 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  
(a) Historical cost                      (b) Net realizable value                      (c) Cost less depreciation
- In the case of downward revaluation of a plant which is for the first time revalued, the account to be debited is  
(a) Plant account                      (b) Revaluation Reserve                      (c) Profit & Loss account
- 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
- The main objective of providing depreciation is to  
(a) Create secret reserve                      (b) Reduce the book value of assets  
(c) Allocate cost of the assets

8. Original cost of a machine was ₹ 25,20,000 salvage value was ₹ 1,20,000, useful life was 6 years. Annual depreciation under Straight Line Method  
(a) ₹ 4,20,000 (b) ₹ 4,00,000 (c) ₹ 3,00,000
9. The cost of a machine is ₹ 20,00,000. Two years later the book value is ₹ 10,00,000. The Straight-line percentage depreciation is  
(a) 50% (b) 33-1/3% (c) 25%
10. Original cost ₹13,00,000, Salvage value ₹ 40,000, Useful life 6 years. Depreciation for the first year under sum-of-years digit methods will be  
(a) ₹ 60,000 (b) ₹ 1,20,000 (c) ₹ 3,60,000
11. Which of the following assets does not depreciate?  
(a) Machinery and equipment  
(b) Patents  
(c) Land
12. A company purchased a machinery on April 01, 2010, for ₹ 15,00,000. It is estimated that the machinery will have a useful life of 5 years after which it will have no salvage value. The depreciation charged during the year 2014-15 was  
(a) ₹ 5,00,00 (b) ₹ 4,00,000 (c) ₹ 3,00,000
13. If the equipment account has a balance of ₹ 22,50,000 and the accumulated depreciation account has a balance of ₹ 14,00,000, the book value of the equipment is  
(a) ₹ 36,50,000 (b) ₹ 8,50,000 (c) ₹ 14,00,000

### Theory Questions

1. Distinguish between Straight line method of depreciation and Written down value method of depreciation.
2. Write short notes on:
  - (i) Depletion method of depreciation
  - (ii) Sinking fund method.
3. What factors are considered for calculation of depreciation of a plant?

**Practical Questions**

1. A firm's plant and machinery account at 31<sup>st</sup> December, 2015 and the corresponding depreciation provision account, broken down by year of purchase are as follows:

Year of Purchase	Plant and Machinery at cost ₹	Depreciation Provision ₹
1998	2,00,000	2,00,000
2004	3,00,000	3,00,000
2005	10,00,000	9,50,000
2006	7,00,000	5,95,000
2013	5,00,000	75,000
2014	3,00,000	15,000
	30,00,000	21,35,000

Depreciation is at the rate of 10% per annum on cost. It is the Company's policy to assume that all purchases, sales or disposal of plant occurred on 30th June in the relevant year for the purpose of calculating depreciation, irrespective of the precise date on which these events occurred.

During 2015 the following transactions took place:

1. Purchase of plant and machinery amounted to ₹ 15,00,000
2. Plant that had been bought in 2004 for ₹ 170,000 was scrapped.
3. Plant that had been bought in 2005 for ₹ 90,000 was sold for ₹ 5,000.
4. Plant that had been bought in 2006 for ₹ 2,40,000 was sold for ₹ 15,000.

**You are required to:**

Calculate the provision for depreciation of plant and machinery for the year ended 31<sup>st</sup> December, 2015. In calculating this provision you should bear in mind that it is the company's policy to show any profit or loss on the sale or disposal of plant as a completely separate item in the Profit and Loss Account. You are also required to prepare the following ledger accounts during 2015.

- (i) Plant and machinery at cost;
- (ii) Depreciation provision;
- (iii) Sales or disposal of plant and machinery.

2. The Machinery Account of a Factory showed a balance of ₹ 19,00,000 on 1<sup>st</sup> January, 2015. Its accounts were made up on 31<sup>st</sup> December each year and depreciation is written off at 10% p.a. under the Diminishing Balance Method.

On 1<sup>st</sup> June 2015, a new machinery was acquired at a cost of ₹ 2,80,000 and installation charges incurred in erecting the machine works out to ₹ 8,920 on the same date. On 1<sup>st</sup> June, 2015 a machine which had cost ₹ 4,37,400 on 1<sup>st</sup> January 2013 was sold for ₹ 75,000. Another machine which had cost ₹ 4,37,000 on 1<sup>st</sup> January, 2014 was scrapped on the same date and it realised nothing.

Write a plant and machinery account for the year 2015, allowing the same rate of depreciation as in the past calculating depreciation to the nearest multiple of a Rupee.

3. M/s. Prabha Pharmaceuticals has imported a machine on 1<sup>st</sup> July, 2014, for Pound 8,000, paid custom duty and freight ₹ 80,000 and incurred erection charges ₹ 60,000. Another local machinery costing ₹1,00,000 was purchased on 1st Jan 2015. On 1<sup>st</sup> July, 2016, a portion of the imported machinery (value one-third) got out of order and was sold for ₹ 1,34,800. Another machinery was purchased to replace the same for ₹ 50,000. Depreciation is to be calculated at 20% p.a on cost. Show the machinery account for 2014, 2015, and 2016. Exchange rate is ₹ 80 per pound.
4. The LG Transport company purchased 10 trucks at ₹ 45,00,000 each on 1<sup>st</sup> April 2014. On October 1st, 2016, one of the trucks is involved in an accident and is completely destroyed and ₹ 27,00,000 is received from the insurance in full settlement. On the same date another truck is purchased by the company for the sum of ₹ 50,00,000. The company write off 20% on the original cost per annum. The company observe the calendar year as its financial year.

Give the motor truck account for two year ending 31 Dec, 2017.

### ANSWERS/HINTS

#### MCQs

- |     |     |    |     |    |     |     |     |     |     |     |     |
|-----|-----|----|-----|----|-----|-----|-----|-----|-----|-----|-----|
| 1.  | (a) | 2. | (c) | 3. | (b) | 4.  | (b) | 5.  | (c) | 6.  | (a) |
| 7.  | (c) | 8. | (b) | 9. | (c) | 10. | (c) | 11. | (c) | 12. | (c) |
| 13. | (b) |    |     |    |     |     |     |     |     |     |     |

#### Theoretical Questions

1. Under straight line method an equal amount is written off each year throughout the working life of the depreciable tangible asset so as to reduce the cost of the asset to nil or to its scarp value at the end. Under reducing balance method, a fixed percentage is charged on the diminishing balance of the asset each year so as to reduce the value of the asset to its scarp value at the end of useful life. The basic distinction between these two methods are as follows:

Under straight line method, annual depreciation charge is equal throughout the life of the asset; but under reducing balance method, depreciation charge is reduced over the years as the asset grows old.

Under straight-line method, the asset can be fully depreciated but under reducing balance method asset can never be fully depreciated.

Under straight line method the charge for depreciation is constant while repair charges increase with the life of the asset, so the total charge throughout the life of the asset will not be uniform. To the contrary, under reducing balance method, depreciation charges become high in the initial years but generally repair remains low. As the asset grows old depreciation charge reduces but repair expenses increase. Thus under reducing balance method depreciation and repairs are more or less evenly distributed throughout the life of the asset.

2. (i) Natural resources include physical assets like mineral deposits, oil and gas resources and timber. These natural resources exhaust by exploitation.

Depletion per unit is calculated as

$$\frac{\text{Acquisition cost-Residual value}}{\text{Estimated life in terms of production units}}$$

- (ii) Sinking fund method of providing depreciation is used where the aim is not only to charge depreciation but also to replace the asset. In case a large sum of money is required for the replacement of an asset 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 concern itself the readily realisable assets 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 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 to the profit and loss account or general reserve.
3. The factors considered for calculation of depreciation are as: (i) Cost of asset including expenses for installation, commissioning, trial run etc. (ii) Estimated useful life of the asset and (iii) Estimated scrap value (if any) at the end of useful life of the asset.

### Practical Questions

#### Answer 1

#### Calculation of provision for depreciation of plant and machinery for the year ended 31st December, 2015.

Plant purchased in:		₹	₹
1998		nil	
2004		nil	
2005			50,000
2006	1/2 year at 10% on ₹ 2,40,000	12,000	
	1 year at 10% on ₹ 4,60,000	46,000	58,000
2013	10% on ₹ 5,00,000		50,000
2014	10% on ₹ 3,00,000		30,000
2015	1/2 year at 10% on ₹ 15,00,000		75,000
			2,63,000



**Plant and Machinery Account (for 2015) at Cost**

	₹		₹
To Balance b/d	30,00,000	By Disposals account:	
To Purchases A/c	15,00,000	Scrapped	1,70,000
		Sold	3,30,000
		By Balance c/d	40,00,000
	45,00,000		45,00,000

**Depreciation Provision Account (for 2015)**

		₹		₹
To Disposal Account :			By Balance b/d	21,35,000
Scrapped - 2004 assets	1,70,000		By Profit and Loss Account	2,63,000
Sold - 2005 assets	90,000			
Sold - 2006 assets	2,16,000	4,76,000		
To Balance c/d		19,22,000		
		23,98,000		23,98,000

**Sale or disposal of Plant and Machinery Account (for 2015)**

		₹		₹
To Plant and Machinery :			By Provision for Depreciation	4,76,000
Scrapped		1,70,000	By Cash-Sales Proceeds	20,000
Sold		3,30,000	By Loss on sales	4,000
		5,00,000		5,00,000

**Answer 2**
**Plant and Machinery Account**

		₹		₹
2015			2015	
Jan. 1	To Balance b/d	19,00,000	June 1	By Bank (Sales)
June. 1	To Bank (2,80,000 + 8,920)	2,88,920		By Depreciation (on sold machine)
				By Loss on sale
				By Loss on scrapping the machine
				By Depreciation (on scrapped machinery)
				By Depreciation (Note iii)
				By Balance c/d
		21,88,920		
				21,88,920

**Working Note :****(i) Calculation of loss on sale of machine on 1-6-2015**

	₹
Cost on 1-1-2013	4,37,400
Less : Depreciation @ 10% on ₹ 4,37,400	(43,740)
W.D.V. on 31-12-2013	3,93,660
Less : Depreciation @ 10% on ₹ 3,93,660	(39,366)
W.D.V. on 31-12-2014	3,54,294
Less : Depreciation @ 10% on ₹ 3,54,294 for 5 months	(14,762)
	3,39,532
Less : Sale proceeds on 1-6-2015	(75,000)
Loss	2,64,532

**(ii) Calculation of loss on scrapped machine**

	₹
Cost on 1-1-2014	4,37,000
Less : Depreciation @ 10% on ₹ 4,37,000	(43,700)
W.D.V. on 1-1-2015	3,93,300
Less : Depreciation @ 10% on ₹ 3,93,300 for 5 months	(16,388)
Loss	3,76,912

**(iii) Depreciation**

Balance of machinery account on 1-1-2015		19,00,000
Less : W.D.V of machinery sold	3,54,294	
W.D.V. of machinery scrapped	3,93,300	(7,47,594)
W.D.V. of other machinery on 1-1-2015		11,52,406
Depreciation @ 10% on ₹ 11,52,406 for 12 months		1,15,240
Depreciation @ 10% on ₹ 2,88,920 for 7 months		16,854
		1,32,094

**Answer 3****Machinery A/c**

Date	Particulars	Amount	Date	Particulars	Amount
2014			2014		
Jul-01	To Bank A/c	6,40,000	Dec-31	By Depreciation A/c for ½ yr.	78,000
Jul-01	To Bank A/c	80,000	Dec-31	By balance c/d	7,02,000
Jul-01	To Bank A/c	60,000			
		7,80,000			7,80,000
2015			2015		
Jan-01	To balance b/d	7,02,000	Dec-31	By Depreciation A/c	1,56,000
Jan-01	To Bank A/c	1,00,000	Dec-31	By balance c/d	6,46,000
		8,02,000			8,02,000

Date	Particulars	Amount	Date	Particulars	Amount
2016			2016		
Jan-01	To balance b/d	6,46,000	Jul-01	By Bank A/c	1,34,800
	To Bank A/c	50,000	Jul-01	By Depreciation A/c (On machinery sold)	26,000
			Jul-01	By Profit & Loss A/c (Loss on sale of machinery)	21,200
			Dec-31	By Depreciation A/c	1,24,000
			Dec-31	By balance c/d	3,90,000
		6,96,000			6,96,000

**Working Note:**

1. In the absence of information about depreciation method to be used, Straight line method of depreciation has been used. Alternatively, written down value method of depreciation may be assumed.
2. The method of machinery sold as on 1.7.2016 may be obtained as follow:

	₹
Cost of machinery sold as on 1.7.2014	2,60,000
Less: Depreciation for 2014 (for ½ year)	(26,000)
	2,34,000
Less: Depreciation for 2015	(52,000)
	1,82,000
Less: Depreciation for 2016 (for ½ year)	(26,000)
	1,56,600
Less: Amount received	(1,34,800)
	21,200

**Answer 4**

Date	Particulars	Amount	Date	Particulars	Amount
2016			2016		
Jan-01	To balance b/d	2,92,50,000	Oct-01	By bank A/c	27,00,000
	To Profit & Loss A/c				
Oct-01	(Profit on settlement of Truck)	4,50,000	Oct-01	By Depreciation on lost assets	6,75,000

Oct-01	To Bank A/c	50,00,000	Oct-01	By Depreciation A/c	83,50,000
			Dec-31	By balance c/d	2,29,75,000
		<u>3,47,00,000</u>			<u>3,47,00,000</u>
2017			2017		
Jan-01	To balance b/d	2,29,75,000	Dec-31	By Depreciation A/c	91,00,000
			Dec-31	By balance c/d	1,38,75,000
		<u>2,29,75,000</u>			<u>2,29,75,000</u>

**Working Note:**

- To find out loss on Profit on settlement of truck

	₹
Original cost as on 1.4.2014	45,00,000
Less: Depreciation for 2014	<u>(6,75,000)</u>
	38,25,000
Less: Depreciation for 2015	<u>(9,00,000)</u>
	29,25,000
Less: Depreciation for 2016 (9 months)	<u>(6,75,000)</u>
	22,50,000
Less: Amount received from Insurance company	<u>(27,00,000)</u>
	<u>4,50,000</u>