

# 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 the fixed assets 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 depreciable assets.
- ◆ Familiarize with the accounting treatment for change in the method of depreciation from Straight Line Method to Reducing Balance method.

**1. INTRODUCTION**

Fixed assets like plant and machinery etc. are used in the business for the purpose of production of goods or for providing useful services in the course of production. These fixed assets are utilized during operations of a business for a number of successive accounting periods. Value of such fixed assets decreases with passage of time and its utilization i.e. wear and tear. Value of portion of fixed asset utilized for generating revenue must be recovered during a particular accounting year to ascertain true income. This portion of cost of fixed asset allocated to a particular accounting year is called depreciation.

**1.1 CONCEPT OF DEPRECIATION**

Depreciation has been defined as 'the diminution in the utility or value of an asset, due to natural wear and tear, exhaustion of the subject-matter, effluxion of time accident, obsolescence or similar causes'. The words "accident", "obsolescence" and the phrase "effluxion of time" included in the definition, signify that when an asset held by a business cannot be employed for even one of the purposes for which it was acquired due to some damage suffered, the assets having become out of date or due to no occasion having arisen for it to be used, the loss caused to the business will be depreciation. Depreciation caused by any one of the last mentioned factors often is described as external depreciation, to distinguish it from the natural wear and tear of assets which is known as internal depreciation.

Depreciation

is a measure of wearing out, consumption or other loss of value of a depreciable asset arising from use, effluxion of time or obsolescence through technology and market changes. 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. Depreciation includes amortisation of assets whose useful life is predetermined'.

'Depreciable Assets'

are those which (i) are expected to be used during more than one accounting period; and (ii) have a limited useful life; and (iii) are held by an enterprise for use in the production or supply of goods and services for rental to others or for administrative purposes and not for the purpose of sale in the ordinary course of business.



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.

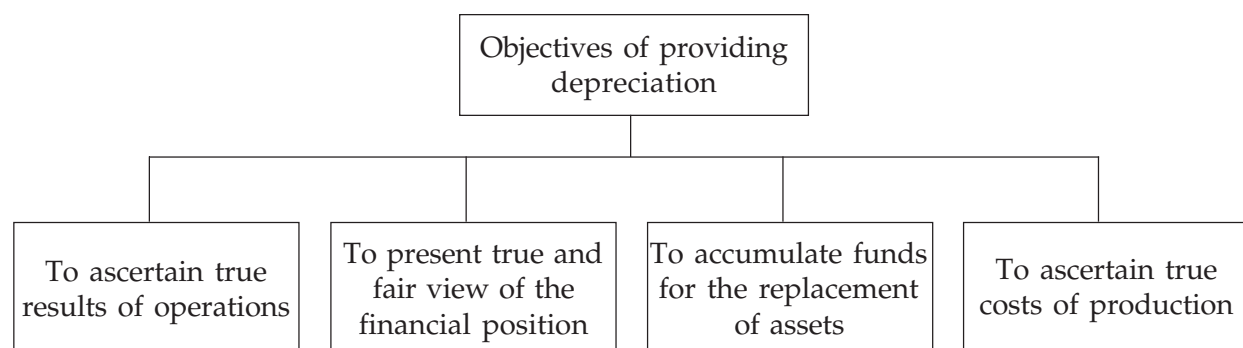
A pertinent question, of course, is the price likely to prevail at the time of replacement. That is why some people advocate the calculation of depreciation on the basis of replacement price rather than cost.

## 1.2 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.

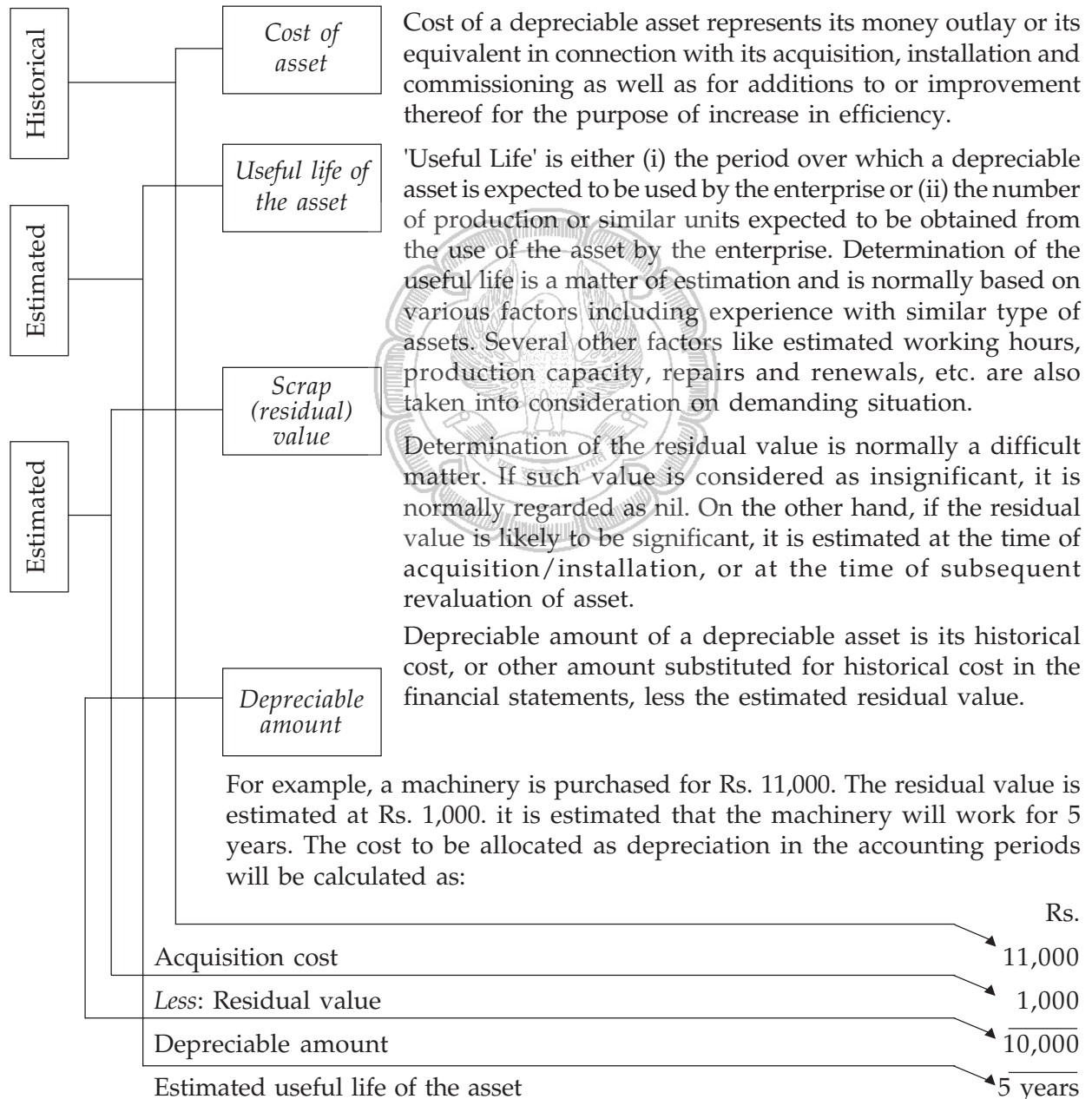


## 2. FACTORS IN THE MEASUREMENT OF DEPRECIATION

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

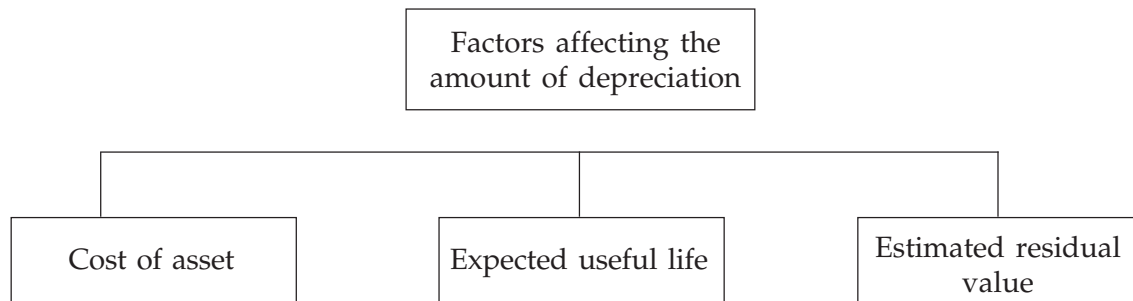
1. Cost of asset including expenses for installation, commissioning, trial run etc.
2. Estimated useful life of the asset.
3. Estimated scrap value (if any) at the end of useful life of the asset.

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





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



### 3. METHODS FOR PROVIDING DEPRECIATION

Generally, methods for providing depreciation are based on formula, developed on a study of the behaviour 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 two most common methods for providing depreciation are the Straight Line Method and the Reducing Balance Method. The Straight Line Method is the most suitable and accurate method to adopt in most cases. The Income Tax Rules, however, prescribe the Reducing 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, patents and copy rights, 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 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, 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

#### 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, 2008 at a cost of Rs. 14,000 and spent Rs. 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. Show the Machinery Account and Depreciation Account for the year 2008-2009.

### Solution

*As per Straight Line Method*

#### Machinery Account

Dr.		Rs.	2008		Cr.
2008					Rs.
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 Rs. 15,000 for 6 months	750
		15,000	Dec. 31	By Balance c/d	14,250
					15,000
2009			2009		
Jan. 1	To Balance b/d	14,250	Dec. 31	By Depreciation A/c	1,500
				10% on Rs. 15,000	
			Dec. 31	By Balance c/d	12,750
		14,250			14,250

#### Depreciation Account

2008		Rs.	2008		Rs.
Dec. 31	To Machinery A/c	750	Dec. 31	By Profit & Loss A/c	750
2009			2009		
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, 2008 at a cost of Rs. 14,000 and spent Rs. 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. Show the Machinery Account on diminishing balance method for the year 2008-2009.

**Solution**

*As per Reducing Balance Method*

**Machinery Account**

2008		Rs.	2008		Rs.
July 1	To Bank A/c	14,000	Dec. 31	By Depreciation A/c (Rs. 15,000 x 10% x $\frac{6}{12}$ )	750
	To Bank A/c	1,000	Dec. 31	By Balance c/d	14,250
		<hr/>			<hr/>
		15,000			15,000
2009			2009		
Jan. 1	To Balance b/d	14,250	Dec. 31	By Depreciation A/c (Rs. 14,250 x 10%)	1,425
			Dec. 31	By Balance c/d	12,825
		<hr/>			<hr/>
		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 in india; and its advantages are the same as those of the Reducing Balance Method.

**Illustration 3**

M/s Raj & Co. purchased a machine for Rs. 1,00,000. Estimated useful life and scrap value were 10 years and Rs. 12,000 respectively. The machine was put to use on 1.1.2004. Show Machinery Account and Depreciation Account in their books for 2009 by using sum of years digits method.





## Solution

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

Dr.		Rs.	2005		Cr.
2009					Rs.
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
		<u>36,000</u>			<u>36,000</u>
2010					
Jan.1	To Balance b/d	28,000			

### Depreciation Account

2009		Rs.	2009		Rs.
Dec. 31	To Machinery A/c	8,000	Dec. 31	By Profit and Loss A/c	8,000
		<u>8,000</u>			<u>8,000</u>

### Working Notes :

(1) Total of sum of digit of depreciation for 2004-2008

$$= (\text{Rs. } 1,00,000 - \text{Rs. } 12,000) \times \frac{10+9+8+7+7}{10(10+1)}$$

$$= \text{Rs. } 88,000 \times \frac{40}{55} = \text{Rs. } 64,000$$

(2) Written down value as on 1-1-2008

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

(3) Depreciation for 2009

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

### 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,

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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, 2006 for 4 years at a cost of Rs. 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 Re. 1 by annuity method over 4 years charging 5% interest, one must write off a sum of Rs. 0.282012 [To write off Rs. 20,000 one has to write off every year Rs. 5,640.24 i.e.  $0.282012 \times 20,000$ ].

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



## Solution

### Lease Account

Dr.		Rs.	2006		Cr.
2006			2006		Rs.
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 Rs. 20,000)	1,000.00		By Balance c/d	15,359.76
		<u>21,000.00</u>			<u>21,000.00</u>
2007			2007		
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 Rs. 15,359.76)	767.99		By Balance c/d	10,487.51
		<u>16,127.75</u>			<u>16,127.75</u>
2008			2008		
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>
2009			2009		
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

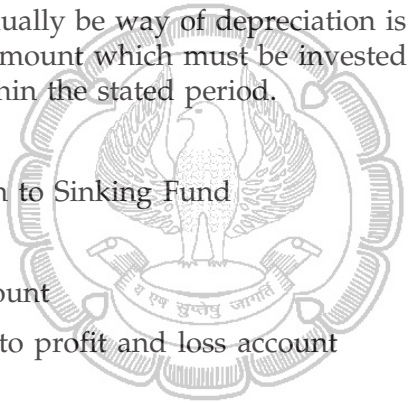
2006		Rs.	2006		Rs.
Dec. 31	To Depreciation A/c	<u>5,640.24</u>	Dec. 31	By Interest A/c	<u>1,000.00</u>
2007			2007		
Dec. 31	To Depreciation A/c	<u>5,640.24</u>	Dec. 31	By Interest A/c	<u>767.99</u>
2008			2008		
Dec. 31	To Depreciation A/c	<u>5,640.24</u>	Dec. 31	By Interest A/c	<u>524.38</u>
2009			2009		
Dec. 31	To Depreciation A/c	<u>5,640.24</u>	Dec. 31	By Interest A/c	<u>268.59</u>

**3.5 SINKING FUND METHOD**

If a large sum of money is required for 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 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 Re. 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	
<i>If sale is at a profit</i>	
Sinking Fund Investment Account	Dr.
To Sinking Fund Account	
<i>If sales is at loss</i>	
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 January, 2007, Z Limited purchased the lease of property for Rs. 10,000. The lease would expire on 31st December, 2009. 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.

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During the three years following transactions took place:

2007 31st December: A contribution from profits of Rs. 3,200 was made and this sum was invested.

2008 13th July: Investments which originally costed Rs. 1,100 were sold for Rs. 1,200 and the proceeds of sale were re-invested.

2008 31st December: A contribution from profits of Rs. 3,200 was made; interest on investments of Rs. 160 was received and these amounts were reinvested.

2009 9th May: Investments which originally costed Rs. 2,100 were sold at a profit of Rs. 200 and proceeds of sale were re-invested.

2009 31st December: Interest on investments Rs. 480 was received which was not invested. All existing investments were sold for Rs. 6,600. A contribution from profit of an amount required to make up the sinking fund to Rs. 10,000 was made and this amount was not invested.

You are required to prepare Sinking Fund and Sinking Fund Investment Account for the years 2007-2009.

### Solution

		Sinking Fund Account			
2007		Rs.	2007		Rs.
Dec. 31	To Balance c/d	3,200	Dec. 31	By Depreciation A/c	3,200
		3,200			3,200
2008			2008		
Dec. 31	To Balance c/d	6,660	Jan. 1	By Balance b/d	3,200
			July 13	By S.F. Investment A/c	100
			Dec. 31	By Interest on S.F. Investment A/c	160
				By Depreciation A/c	3,200
		6,660			6,660
2009			2009		
Dec. 31	To S.F. Investment A/c	260	Jan. 1	By Balance b/d	6,660
	To Lease A/c	10,000	May 9	By S.F. Investment A/c	200
			Dec. 31	By Interest on S.F. Investment A/c	480
				By Depreciation A/c	2,920
				(Balancing Figure)	
		10,260			10,260



### Sinking Fund Investment Account

2007		Rs.	2007		Rs.
Dec. 31	To Bank A/c	3,200	Dec. 31	By Balance c/d	3,200
		3,200			3,200
2008			2008		
Jan. 1	To Balance b/d	3,200	July 13	By Bank (sale)	1,200
July 13	To S.F.A/c (profit on sale)	100	Dec. 31	By Balance c/d	6,660
July 13	To Bank A/c (investment of sale proceed)	1,200			
Dec. 31	To Bank A/c (investment of depreciation amount and interest)	3,360			
		7,860			7,860
2009			2009		
Jan. 1	To Balance b/d	6,660	May 9	By Bank	2,300
May 9	To S.F. A/c (profit on sale)	200	Dec.31	By Bank	6,600
May 9	To Bank A/c (investment of sale proceeds)	2,300	Dec. 31	By S.F. A/c (loss on sale)	260
		9,160			9,160

#### Illustration 6

On the basis of the data given in the illustration 5, prepare Lease Account and Depreciation Account for the years 2007-2009.

#### Solution

#### Lease Account

2007		Rs.	2007		Rs.
Jan.1	To Bank A/c	10,000	Dec. 31	By Balance c/d	10,000
		10,000			10,000
2008			2008		
Jan. 1	To Balance b/d	10,000	Dec.31	By Balance c/d	10,000
		10,000			10,000
2009			2009		
Jan.1	To Balance b/d	10,000	Dec. 31	By Sinking Fund A/c	10,000
		10,000			10,000

**Depreciation Account**

2007		Rs.	2007		Rs.
Dec. 31	To Sinking Fund A/c	3,200	Dec. 31	By Profit & Loss A/c	3,200
		<u>3,200</u>			<u>3,200</u>
2008			2008		
Dec. 31	To Sinking Fund A/c	3,200	Dec. 31	By Profit & Loss A/c	3,200
		<u>3,200</u>			<u>3,200</u>
2009			2009		
Dec. 31	To Sinking Fund A/c	2,920	Dec. 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 Rs. 3,00,000 having an estimated total working of 24,000 hours. The scrap value is expected to be Rs. 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

Determine Annual Depreciation under Machine Hour Rate Method.

**Solution**

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

Year	Annual Depreciation
1 - 3	$\frac{3,000}{24,000} \times (\text{Rs. } 3,00,000 - \text{Rs. } 20,000) = \text{Rs. } 35,000$





4 - 6	$\frac{2,600}{24,000} \times (\text{Rs. } 3,00,000 - \text{Rs. } 20,000) = \text{Rs. } 30,333$
7 - 10	$\frac{1,800}{24,000} \times (\text{Rs. } 3,00,000 - \text{Rs. } 20,000) = \text{Rs. } 21,000$

### 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 :

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

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

#### Illustration 8

A machine is purchased for Rs. 2,00,000. Its estimated useful life is 10 years with a residual value of Rs. 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

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	$\frac{20,000}{1,50,000} \times (\text{Rs. } 2,00,000 - \text{Rs. } 20,000) = \text{Rs. } 24,000$
4-7	$\frac{15,000}{1,50,000} \times (\text{Rs. } 2,00,000 - \text{Rs. } 20,000) = \text{Rs. } 18,000$
8-10	$\frac{10,000}{1,50,000} \times (\text{Rs. } 2,00,000 - \text{Rs. } 20,000) = \text{Rs. } 12,000$

**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.

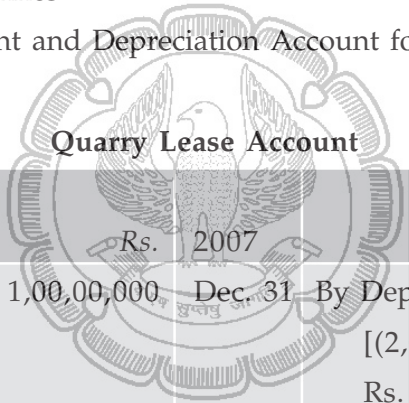
**Illustration 9**

M/s Jay & Co. took lease of a quarry on 1-1-2007 for Rs. 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
2007	2,000 tonnes
2008	10,000 tonnes
2009	15,000 tonnes

Show the Quarry Lease Account and Depreciation Account for each year from 2007 to 2009.

**Solution**



**Quarry Lease Account**

Dr.		Rs.		2007		Cr.		Rs.	
2007									
Jan.	To Bank A/c	1,00,00,000		Dec. 31	By Depreciation A/c		1,00,000		
					[(2,000/2,00,000) ×				
					Rs. 1,00,00,000]				
				Dec. 31	By Balance c/d		99,00,000		
		<u>1,00,00,000</u>					<u>1,00,00,000</u>		
2008				2008					
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		
		<u>99,00,000</u>					<u>99,00,000</u>		
2009				2009					
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		
		<u>94,00,000</u>					<u>86,50,000</u>		
							<u>94,00,000</u>		



### Depreciation Account

Dr.		Rs.	2007		Cr.
2007			2007		Rs.
Dec. 31	To Quarry lease A/c	1,00,000	Dec. 31	By Profit & Loss A/c	1,00,000
		<u>1,00,000</u>			<u>1,00,000</u>
2008			2008		
Dec. 31	To Quarry lease A/c	5,00,000	Dec. 31	By Profit & Loss A/c	5,00,000
		<u>5,00,000</u>			<u>5,00,000</u>
2009			2009		
Dec. 31	To Quarry lease A/c	7,50,000	Dec. 31	By Profit & Loss A/c	7,50,000
		<u>7,50,000</u>			<u>7,50,000</u>

#### 4. PROFIT OR LOSS ON THE SALE / DISPOSAL OF DEPRECIABLE ASSETS

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 1<sup>st</sup> January, 2009 is Rs. 50,000. Depreciation is charged on the asset @10%. On 1<sup>st</sup> July 2009, the asset is sold for Rs. 32,000. In such a situation, profit or loss on the sale will be calculated as follows:

	Rs.
Book value as on 1 <sup>st</sup> Jan., 2009	50,000
Less: Depreciation for 6 months @10% (from 1 <sup>st</sup> Jan., 2009 to 30 <sup>th</sup> June, 2009)	<u>2,500</u>
Written down value as on 1 <sup>st</sup> July, 2009	47,500
Less: Sale proceeds as on 1 <sup>st</sup> July, 2009	<u>32,000</u>
Loss on sale of the asset	<u>15,500</u>

#### Illustration 10

A firm purchased on 1<sup>st</sup> January, 2008 certain machinery for Rs. 58,200 and spent Rs. 1,800 on its erection. On July 1, 2008 another machinery for Rs. 20,000 was acquired. On 1<sup>st</sup> July, 2009 the machinery purchased on 1<sup>st</sup> January, 2008 having become obsolete was auctioned for Rs. 38,600 and on the same date fresh machinery was purchased at a cost of Rs. 40,000.

Depreciation was provided for annually on 31<sup>st</sup> December at the rate of 10 per cent p.a. on written down value. Prepare machinery account.

## DEPRECIATION ACCOUNTING

### Solution

#### Machinery Account

<i>Dr.</i>		<i>Rs.</i>			<i>Cr.</i>
2008			2008		<i>Rs.</i>
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>
2009			2009		
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

	<i>Machine I Rs.</i>	<i>Machine II Rs.</i>	<i>Machine III Rs.</i>
Cost	60,000	20,000	40,000
Depreciation for 2008	<u>6,000</u>	<u>1,000</u>	
Written down value	54,000	19,000	
Depreciation for 2009	<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	<u>12,700</u>		



### Illustration 11

A company's plant and machinery account at 31st December, 2008 and the corresponding depreciation provision account, broken down by year of purchase are as follows:

<i>Year of Purchase</i>	<i>Plant and Machinery at cost</i>	<i>Depreciation Provision</i>
1992	20,000	20,000
1998	30,000	30,000
1999	1,00,000	95,000
2000	70,000	59,500
2007	50,000	7,500
2008	30,000	1,500
	<u>3,00,000</u>	<u>2,13,500</u>

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 2009 the following transactions took place:

1. Purchase of plant and machinery amounted to Rs. 1,50,000
2. Plant that had been bought in 1998 for Rs. 17,000 was scrapped.
3. Plant that had been bought in 1999 for Rs. 9,000 was sold for 500.
4. Plant that had been bought in 2000 for Rs. 24,000 was sold for Rs. 1,500.

You are required to:

Calculate the provision for depreciation of plant and machinery for the year ended 31st December, 2009. 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.

## DEPRECIATION ACCOUNTING

### Solution

Calculation of provision for depreciation of plant and machinery for the year ended 31st December, 2009.

Plant purchased in:		Rs.	Rs.
1992		nil	
1998		nil	
1999			5,000
2000	1/2 year at 10% on Rs. 24,000	1,200	
	1 year at 10% on Rs. 46,000	4,600	5,800
2007	10% on Rs. 50,000		5,000
2008	10% on Rs. 30,000		3,000
2009	1/2 year at 10% on Rs. 1,50,000		7,500
			<u>26,300</u>

### Illustration 12

Prepare the following ledger accounts during 2009 from the information given in illustration 11 :

- plant and machinery at cost ;
- depreciation provision;
- sales or disposal of plant and machinery.

### Solution

#### (i) Plant and Machinery Account (for 2009) at Cost

	Rs.		Rs.
To Balance b/d	3,00,000	By Disposals account:	
To Purchases A/c	1,50,000	Scrapped	17,000
		Sold	33,000
		By Balance c/d	4,00,000
	<u>4,50,000</u>		<u>4,50,000</u>



(ii) **Depreciation Provision Account (for 2009)**

	Rs.		Rs.
To Disposal Account :		By Balance b/d	2,13,500
Scrapped-1998 assets 17,000		By Profit and Loss Account	26,300
Sold-1999 assets 9,000			
Sold-2000 assets <u>21,600</u>	47,600		
To Balance c/d	1,92,200		
	<u>2,39,800</u>		<u>2,39,800</u>

(iii) **Sale or disposal of Plant and Machinery Account (for 2009)**

	Rs.		Rs.
To Plant and Machinery :		By Provision for Depreciation	47,600
Scrapped	17,000	By Cash-Sales Proceeds	2,000
Sold	33,000	By Loss on sales	400
	<u>50,000</u>		<u>50,000</u>

**Illustration 13**

The Machinery Account of a Factory showed a balance of Rs. 1,90,000 on 1st January, 2009. Its accounts were made up on 31st December each year and depreciation is written off at 10% p.a. under the Diminishing Balance Method.

On 1st June 2009, a new machinery was acquired at a cost of Rs. 28,000 and installation charges incurred in erecting the machine works out to Rs. 892 on the same date. On 1st June, 2009 a machine which had cost Rs. 4,374 on 1st January 2007 was sold for Rs. 750. Another machine which had cost Rs. 437 on 1st January, 2008 was scrapped on the same date and it realised nothing.

Write a plant and machinery account for the year 2009, allowing the same rate of depreciation as in the past calculating depreciation to the nearest multiple of a Rupee.

## DEPRECIATION ACCOUNTING

### Solution

#### Plant and Machinery Account

Dr.		Rs.	2009		Cr.
2009			2009		Rs.
Jan. 1	To Balance b/d	1,90,000	June 1	By Bank (Sales)	750
June. 1	To Bank (28,000 + 892)	28,892		By Depreciation (on sold machine)	148
				By Loss on sale	2,645
				By Loss on scrapping the machine	377
				By Depreciation (on scrapped machinery)	16
				By Depreciation (Note iii)	20,291
				By Balance c/d	1,94,665
		2,18,892			2,18,892

#### Working Note :

##### (i) Calculation of loss on sale of machine on 1-6-2009

	Rs.
Cost on 1-1-2007	4,374
Less : Depreciation @ 10% on Rs. 4,374	437
W.D.V. on 31-12-2007	3,937
Less : Depreciation @ 10% on Rs. 3,937	394
W.D.V. on 31-12-2008	3,543
Less : Depreciation @ 10% on Rs. 3,543 for 5 months	148
	3,395
Less : Sale proceeds on 1-6-2009	750
Loss	2,645

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

	Rs.
Cost on 1-1-2008	437
Less : Depreciation @ 10% on Rs. 437	44
W.D.V. on 1-1-2009	393
Less : Depreciation @ 10% on Rs. 393 for 5 months	16
Loss	377





### (iii) Depreciation

Balance of machinery account on 1-1 2009		1,90,000
Less : W.D.V.of machinery sold	3,543	
W.D.V. of machinery scrapped	<u>393</u>	<u>3936</u>
W.D.V. of other machinery on 1-1-2009		<u>1,86,064</u>
Depreciation @ 10% on Rs. 1,86,064 for 12 months		18,606
Depreciation @ 10% on Rs. 28,892 for 7 months		<u>1,685</u>
		<u>20,291</u>

## 5. CHANGE IN THE METHOD OF DEPRECIATION

The depreciation method selected should be applied consistently from period to period. A change from one method of providing depreciation to another should be made only if the adoption of the new method is required by the statute or for compliance with the accounting standard or if it is considered that the change would result in the more appropriate preparation and presentation of the financial statements of the enterprise. Whenever any change in depreciation method is made, depreciation should be recalculated in accordance with the new method from the date of asset coming into use. The deficiency or surplus arising from retrospective recomputation of depreciation should be debited or credited to Profit and Loss account in the year in which the method of depreciation is changed. Such change is treated as change in accounting policy. Its effect needs to be quantified and disclosed.

<i>Example</i> : Cost of Machine	Rs. 1,05,000
Residual Value	Rs. 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.

In this case: Rate of WDV depreciation would be;

$$1 - \sqrt[10]{\frac{5,000}{1,05,000}} = 26.247\%$$

Depreciation already charged for the first 2 years as per straight line method is Rs. 20,000.

Retrospective computation of depreciation as per WDV method:

Cost of Machine	Rs. 1,05,000
Less : Depreciation for the 1st year @ 26.247%	<u>Rs. 27,559</u>
WDV at the beginning of 2nd year	Rs. 77,441
Less : Depreciation for the 2nd year @ 26.247%	<u>20,326</u>
WDV at the beginning of 3rd year	Rs. 57,115
Less : Depreciation for the 3rd year	<u>14,991</u>
	<u>42,124</u>

## DEPRECIATION ACCOUNTING

WDV : Depreciation for first two years	Rs. 47,885
Less : Depreciation already charged as per straight line method $\left(\frac{Rs.1,05,000 - Rs.5,000}{10}\right) \times 2$	Rs. 20,000
Shortfall	<u>Rs. 27,885</u>

Therefore in the profit and loss account of the 3rd year, the short depreciation due to change in the method of depreciation of Rs. 27,885 should be debited. In addition, depreciation as per written down value method for 3rd year of Rs. 14,991, should also be debited.

### Illustration 14

A firm purchased on 1st January, 2007 certain machinery for Rs. 52,380 and spent Rs. 1,620 on its erection. On January 1, 2007 another machinery for Rs. 19,000 was acquired. On 1st July, 2008 the machinery purchased on 1st January, 2007 having become obsolete was auctioned for Rs. 28,600 and on the same date fresh machinery was purchased at a cost of Rs. 40,000.

Depreciation was provided annually on 31st December at the rate of 10 per cent on written down value. In 2009, however, the firm changed this method of providing depreciation and adopted the method of providing 5 per cent per annum depreciation on the original cost of the machinery with retrospective effect.

### Solution

		<b>Machinery Account</b>			
		Rs.	2007	Rs.	
2007					
Jan. 1	To Bank	52,380	Dec. 31	By Depreciation A/c	7,300
Jan. 1	To Bank-erection charges	1,620		By Balance c/d	65,700
Jan. 1	To Bank	19,000			
		<u>73,000</u>			<u>73,000</u>
2008			2008		
Jan. 1	To Balance b/d	65,700	July 1	By Depreciation	2,430
July 1	To Bank	40,000		By Bank	28,600
				By Profit and Loss A/c	17,570
			Dec. 31	By Depreciation A/c	3,710
				By Balance c/d	53,390
		<u>1,05,700</u>			<u>1,05,700</u>
2009			2009		
Jan. 1	To Balance b/d	53,390	Dec. 31	By Depreciation A/c	2,950
	To Profit and Loss A/c (Excess Dep. written back)	2,710		By Balance c/d	53,150
		<u>56,100</u>			<u>56,100</u>



### Working Notes :

(1) Book Value of Machines:

	<i>Machine I Rs.</i>	<i>Machine II Rs.</i>	<i>Machine III Rs.</i>
Cost	54,000	19,000	40,000
Depreciation for 2007	5,400	1,900	
Written down value	48,600	17,100	
Depreciation for 2008	2,430	1,710	2,000
Written down value	46,170	15,390	38,000
Sale Proceeds in 2009	28,600		
Loss on Sale	17,570		

(2) Written down value on the basis of 5% depreciation on straight line basis as at 31st Dec., 2008.

	<i>Machine II Rs.</i>	<i>Machine III Rs.</i>	
Cost	19,000	40,000	
Depreciation for 2 years	1,900		
Depreciation for 1/2 year		1,000	
Total	17,100	39,000	Rs. 56,100

(3) The book value appearing in the books is Rs. 53,390; Rs. 2,710 has to be written back to make this figure Rs. 56,100.

Note : The rate of 10% is assumed to be per annum.

### Illustration 15

Messers Mill and Wright commenced business on 1st January 2005, when they purchased plant and equipment for Rs. 7,00,000. They adopted a policy of (i) charging depreciation at 15% per annum on diminishing balance basis and (ii) charging full year's depreciation on additions.

## DEPRECIATION ACCOUNTING

Over the years, their purchases of plant have been:

<i>Date</i>	<i>Amount</i>
	<i>Rs.</i>
1-8-2006	1,50,000
30-9-2009	2,00,000

On 1-1-2009 it was decided to change the method and rate of depreciation to 10% on straight line basis with retrospective effect from 1-1-2005 the adjustment being made in the books of account.

Calculate the difference in depreciation to be adjusted in the Plant and Equipment being made in the accounts for the year ending 31st December, 2009.

### Solution

#### Depreciation on written down value basis

	<i>Purchased on Jan. 1, 2005</i>	<i>Purchased on Aug. 1, 2006</i>	<i>Total Depreciation</i>
	<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>
2005			
Cost	7,00,000		
Depreciation	1,05,000		1,05,000
Written Down Value (WDV)	5,95,000	1,50,000	
2006			
Depreciation	89,250	22,500	1,11,750
W.D.V.	5,05,750	1,27,500	
2007			
Depreciation	75,863	19,125	94,988
W.D.V.	4,29,887	1,08,375	
2008			
Depreciation	64,483	16,256	80,739
W.D.V.	3,65,404	92,119	
Depreciation Charged	3,34,596	57,881	
Total Depreciation Charged (A)			3,92,477
Depreciation on straight line basis :			
	<i>Rs.</i>	<i>Rs.</i>	
Annual Depreciation (10% of original cost)	70,000	15,000	
No. of years for which depreciation is to be charged	4	3	
Depreciation charged	2,80,000	45,000	
Total (B)			3,25,000

Difference :

Excess depreciation charged to be adjusted in 2009 (A) – (B) = Rs. 67,477.



### Plant and Equipment Account

Dr.		Rs.	2009		Cr.
2009					Rs.
Jan. 1	To Balance b/d	4,57,523	Dec. 31	By Depreciation (10% of original cost)	1,05,000
	To Profit and Loss A/c adjustment for depreciation	67,477	By	Balance c/d	6,20,000
Sep. 30	To Bank	2,00,000			
		<u>7,25,000</u>			<u>7,25,000</u>
2010					
Jan. 1	To Balance b/d	6,20,000			

## 6. REVISION OF THE ESTIMATED USEFUL LIFE OF THE DEPRECIABLE ASSET

There should be a periodical review of useful life of the depreciable assets. 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 16

M/s. Mayur & Co. purchased a machine on 1.1.2004 for Rs. 20,00,000. Estimated useful life was 10 years and scrap value at the end was expected to be Rs. 2,00,000. On 1.1.2009, the written down value of the machine was revalued to be up by 20%, useful life was re-estimated as 13 years and scrap value as Rs. 2,80,000. The company follows reducing balance method of charging depreciation. Show Machinery Account and Provision for Depreciation Account for the year ended 31.12.2009

### Solution

#### Machinery Account

Dr.		Rs.	2009		Cr.
2009					Rs.
Jan. 1	To Balance b/d	20,00,000	Dec. 31	By Balance c/d	21,26,492
	To Revaluation Reserve	1,26,492			
		<u>21,26,492</u>			<u>21,26,492</u>

**Provision for Depreciation Account**

Dr.		Rs.	2009		Cr.
2009			2009		Rs.
Dec.31	To Balance c/d	14,56,480	Jan. 1	By Balance b/d	13,67,538
		<u>14,56,480</u>	Dec. 31	By Profit and Loss A/c	88,942
					<u>14,56,480</u>

**Working Notes:**

(1) In the year 2004 : Calculation of rate of depreciation as per WDV method

$$= \left[ 1 - \sqrt[10]{\frac{2,00,000}{20,00,000}} \right] \times 100 = 20.567\%$$

(2) Statement of Depreciation

		Rs.
1.1.2004	Cost of the machine	20,00,000
31.12.2004	Less : Depreciation	<u>4,11,340</u>
1.1.2005	W.D.V.	15,88,660
31.12.2005	Depreciation	<u>3,26,740</u>
1.1.2006	W.D.V.	12,61,920
31.12.2006	Depreciation	<u>2,59,539</u>
1.1.2007	W.D.V.	10,02,381
31.12.2007	Depreciation	<u>2,06,160</u>
1.1.2008	W.D.V.	7,96,221
31.12.2008	Depreciation	<u>1,63,759</u>
1.1.2009	W.D.V.	6,32,462
	Add : Upward Revulsion (20%)	<u>1,26,492</u>
		7,58,954
31.12.2009	Depreciation (11.719%* on Rs. 7,58,954)	<u>88,942</u>
1.1.2010	W.D.V.	<u>6,70,012</u>

(3) \*In the year 2009 : Calculation of rate of depreciation as per WDV method

$$= \left[ 1 - \sqrt[8]{\frac{2,80,000}{7,58,954}} \right] \times 100 = 11.719\%$$



## 7. REVALUATION OF DEPRECIABLE ASSETS

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. If there is an upward revision in the value of asset, then the amount of appreciation is debited to Asset Account and credited to Revaluation Account. If there is downward revision in the value of asset then Profit and Loss Account is debited and Asset Account is credited. 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 17

Consider the following details:

	Machine A	Machine B	
Date of Purchase	1.1.2006	1.1.2008	
Cost Price (Rs.)	12,25,000	15,75,000	
Realisable Value (Rs.)	25,000	75,000	
Useful Life	10 years	15 years	

The machines were subject to depreciation under straight line basis. Calendar year is followed as the accounting year. In 2008, Machine A was revalued upward by Rs. 2 lacs. From 1.1.2009, it is decided to adopt written down value method of depreciation. You are asked to prepare a statement showing depreciation charged on each machine upto 31.12.2009.

### Solution

#### Statement of Depreciation

		Machine A Rs.	Machine B Rs.
1.1.2006	Cost Price	12,25,000	
31.12.2006	Less : SLM depreciation	1,20,000	
1.1.2007	WDV	11,05,000	
31.12.2007	Less : SLM depreciation	1,20,000	
1.1.2008	WDV	9,85,000	
1.1.2008	Cost Price		15,75,000
	Upward Revaluation	2,00,000	
		11,85,000	
31.12.2008	Less : SLM depreciation		
	<u>11,85,000 – 25,000</u>		
	8	1,45,000	1,00,000
1.1.2009	WDV	10,40,000	14,75,000
31.12.2009	Less : Retrospective effect of change in the method of depreciation	5,42,450	1,89,800
		4,97,550	12,85,200
31.12.2009	Less : WDV depreciation	1,73,147	2,36,477
		<u>3,24,403</u>	<u>10,48,723</u>

## DEPRECIATION ACCOUNTING

### Working Notes

(1) WDV Rates :

Machine A  
2006 & 2007

$$1 - \left[ \frac{25,000}{12,25,000} \right]^{\frac{1}{10}} = 32.2\%$$

2008 onwards

$$1 - \left[ \frac{25,000}{7,63,113} \right]^{\frac{1}{8}} = 34.8\%$$

Machine B  
2008 onward

$$1 - \left[ \frac{75,000}{15,75,000} \right]^{\frac{1}{15}} = 18.4\%$$

(2) Retrospective effect of depreciation

WDV depreciation for 2006  
WDV depreciation for 2007  
WDV depreciation for 2008

Less : SLM depreciation already charged  
for the above period

Shortfall

*Machine A*

*Machine B*

3,94,450

2,67,437

2,65,563

9,27,450

3,85,000

5,42,450

2,89,800

2,89,800

1,00,000

1,89,800

## 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 18

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

	Rs.
Balance in Provision for Repairs and Renewals Account as on 31.3.2008	1,15,000
Actual repairs charged/incurred during the year ended	
31.3.2008	75,000
31.3.2009	32,000





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

Draw up the Provision for Repairs and Renewals Account for the years 2007-2008 and 2008-2009.

**Solution**

**Provision for Repairs and Renewal Account**

<i>Dr.</i>		<i>Rs.</i>			<i>Cr.</i>
					<i>Rs.</i>
31.3.2008	To Repairs A/c	75,000	1.4.2007	By Balance b/d	1,50,000
31.3.2008	To Balance c/d	1,15,000		(Balancing figure)	
		<u>1,90,000</u>	31.3.2008	By Profit and Loss A/c	40,000
					<u>1,90,000</u>
31.3.2009	To Repairs A/c	32,000	1.4.2008	By Balance b/d	1,15,000
31.3.2009	To Balance c/d	1,23,000	31.3.2009	By Profit and Loss A/c	40,000
		<u>1,55,000</u>			<u>1,55,000</u>
			1.4.2009	By Balance b/d	1,23,000

**SELF EXAMINATION QUESTIONS**

Pick up the correct answer from the given choices:

- Amit Ltd. purchased a machine on 01.01.2006 for Rs 1,20,000. Installation expenses were Rs 10,000. Residual value after 5 years Rs 5,000. On 01.07.2006, expenses for repairs were incurred to the extent of Rs 2,000. Depreciation is provided @ 10% p.a. under written down value method. Depreciation for the 4th year = \_\_\_\_\_.  
 (a) Rs. 25,000                      (b) Rs. 13,000                      (c) Rs. 10,530                      (d) Rs. 9,477
- Original cost = Rs.1,26,000; Salvage value = Nil; Useful life = 6 years. Depreciation for the first year under sum of years digits method will be  
 (a) Rs.6,000                      (b) Rs. 12,000                      (c) Rs. 18,000                      (d) Rs. 36,000
- Obsolescence of a depreciable asset may be caused by  
 I. Technological changes.  
 II. Improvement in production method.  
 III. Change in market demand for the product or service output.  
 IV. Legal or other restrictions.  
 (a) Only (I) above                      (b) Both (I) and (II) above  
 (c) All (I), (II), (III) and (IV) above                      (d) Only (IV) above

## DEPRECIATION ACCOUNTING

4. Amit Ltd. purchased a machine on 01.01.2006 for Rs 1,20,000. Installation expenses were Rs 10,000. Residual value after 5 years Rs 5,000. On 01.07.2006, expenses for repairs were incurred to the extent of Rs 2,000. Depreciation is provided under straight line method. Depreciation rate = 10%. Annual Depreciation = \_\_\_\_.
- (a) Rs. 13,000                      (b) Rs. 17,000                      (c) Rs. 21,000                      (d) Rs. 25,000
5. Original cost = Rs.1,26,000; Salvage value = Nil; Useful life = 6 years. Depreciation for the fourth year under sum of years digits method will be
- (a) Rs.6,000                      (c) Rs. 12,000                      (c) Rs. 18,000                      (d) Rs. 24,000
6. Which of the following statements is/are false?
- I. The term 'depreciation', 'depletion' and 'amortization' convey the same meaning.
- II. Provision for depreciation A/c is debited when provision for depreciation A/c is created.
- III. The main purpose of charging the profit and loss A/c with the amount of depreciation is to spread the cost of an asset over its useful life for the purpose of income determination.
- (a) Only (I) above                      (b) Only (II) above  
(c) Only (III) above                      (d) All (I) (II) and (III) above
7. Original cost = Rs 1,26,000. Salvage value = 6,000. Depreciation for 2nd year by Units of Production Method, if units produced in 2nd year was 5,000 and total estimated production 50,000.
- (a) Rs. 10,800                      (b) Rs. 11,340                      (c) Rs. 12,600                      (d) Rs. 12,000
8. 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
9. Which of the following is not true with regard to fixed assets?
- (a) They are acquired for using them in the conduct of business operations  
(b) They are not meant for resale to earn profit  
(c) They can easily be converted into cash  
(d) Depreciation at specified rates is to be charged on most of the fixed assets
10. Original cost = Rs 1,26,000. Salvage value = 6,000. Useful Life = 6 years. Annual depreciation under SLM =
- (a) Rs. 21,000                      (b) Rs. 20,000                      (c) Rs. 15,000                      (d) Rs. 14,000



11. Original cost = Rs 1,26,000. Salvage value = 6,000. Depreciation for 2nd year @ 10% p.a. under WDV method =
- (a) Rs. 10,800                      (b) Rs. 11,340                      (c) Rs. 15,000                      (d) Rs. 14,000
12. Which of the following expenses is **not** included in the acquisition cost of a plant and equipment?
- (a) Cost of site preparation                      (b) Delivery and handling charges
- (c) Installation costs
- (d) Financing costs incurred subsequent to the period after plant and equipment is put to use.
13. For charging depreciation, on which of the following assets, the depletion method is adopted?
- (a) Plant & machinery                      (b) Land & building
- (c) Goodwill                      (d) Wasting assets like mines and quarries
14. If a concern proposes to discontinue its business from March 2009 and decides to dispose of all its assets within a period of 4 months, the Balance Sheet as on March 31, 2009 should indicate the assets at their
- (a) Historical cost                      (b) Net realizable value
- (c) Cost less depreciation                      (d) Cost price or market value, whichever is lower
15. In the case of downward revaluation of an asset which is for the first time revalued, the account to be debited is
- (a) Fixed Asset                      (b) Revaluation Reserve
- (c) Profit & Loss account                      (d) General Reserve
16. In which of the following methods, is the cost of the asset written off in equal proportion, during its useful economic life?
- (a) Straight line method                      (b) Written down value method
- (c) Units-of-production method                      (d) Sum-of-the-years'-digits method
17. The portion of the acquisition cost of the asset, yet to be allocated is known as
- (a) Written down value                      (b) Accumulated value
- (c) Realisable value                      (d) Salvage value

## DEPRECIATION ACCOUNTING

On the basis of the information given below answer questions 18 & 19.

Original Cost = Rs 1,00,000. Life = 5 years. Expected salvage value = Rs 2,000.

18. Depreciation for 3rd year as per straight line method is  
(a) Rs. 12,800                      (b) Rs. 19,600                      (c) Rs. 20,000                      (d) Rs. 20,400
19. Rate of depreciation p.a. = \_\_\_\_\_.  
(a) 20.0%                      (b) 19.8%                      (c) 19.6%                      (d) 19.4%

On the basis of the information given below answer questions 20 to 26.

On April 01, 2008 the debit balance of the machinery account of A Ltd. was Rs.5,67,000. The machine was purchased on April 01, 2006. The company charged depreciation at the rate of 10% per annum under diminishing balance method. On October 01, 2008, the company acquired a new machine at a cost of Rs.60,000 and incurred Rs.6,000 for installation of the new machine. The company decided to change the system of providing depreciation from the diminishing balance method to the straight-line method with retrospective effect from April 01, 2006. The rate of depreciation will remain the same. The company decided to make necessary adjustments in respect of depreciation due to the change in the method in the year 2008-2009.

20. Cost of machinery on 01.04.2006 = \_\_\_\_\_.  
(a) Rs. 5,67,000                      (b) Rs. 6,30,000                      (c) Rs. 7,00,000                      (d) Rs. 7,77,778
21. Depreciation provided in 2006-07 = \_\_\_\_\_.  
(a) Rs. 56,700                      (b) Rs. 63,000                      (c) Rs. 70,000                      (d) Rs. 77,778
22. Depreciation provided in 2007-08 = \_\_\_\_\_.  
(a) Rs. 51,030                      (b) Rs. 56,700                      (c) Rs. 63,000                      (d) Rs. 70,000
23. Depreciation under new method for 2006-07 and 2007-08 = \_\_\_\_\_.  
(a) Rs. 1,33,400                      (b) Rs. 1,26,000                      (c) Rs. 1,40,000                      (d) Rs. 1,55,556
24. Further depreciation to be provided = \_\_\_\_\_.  
(a) Rs. 5,670                      (b) Rs. 6,300                      (c) Rs. 7,000                      (d) Rs. 7,778
25. Depreciation for the year 2008-09 = \_\_\_\_\_.  
(a) Rs. 3,300                      (b) Rs. 7,000                      (c) Rs. 10,300                      (d) Rs. 73,300
26. The balance outstanding to the debit of machinery account as on March 31, 2009 after effecting the above changes was  
(a) Rs. 5,45,700                      (b) Rs. 5,52,700                      (c) Rs. 5,46,000                      (d) Rs. 5,49,400

On the basis of the information given below answer questions 27 & 28.

The balance in the accumulated provision for depreciation account of a company as at the beginning of the year 2008-2009 was Rs. 2,00,000 when the original cost of the assets amounted to Rs.10,00,000. The company charges 10% depreciation on a straight line basis for all the assets including those which have been either purchased or sold during the year. One such



asset costing Rs.5,00,000 with accumulated depreciation as at the beginning of the year of Rs.80,000 was disposed off during the year.

27. Depreciation for the current year is

- (a) Rs. 40,000                      (b) Rs. 50,000                      (c) Rs. 60,000                      (d) Rs. 1,00,000

28. The balance of the accumulated depreciation account at the end of the year considering the current year's depreciation charge would be

- (a) Rs. 2,20,000                      (b) Rs. 1,70,000                      (c) Rs. 1,20,000                      (d) Rs. 2,50,000

**On the basis of the information given below answer questions 29 to 34.**

B Limited has been charging depreciation on the straight line method. It charges a full year depreciation even if the machinery is utilized only for part of the year. An equipment which was purchased for Rs.3,50,000 now stands at Rs.2,97,500 after depreciating at the rate of 5% on a straight line basis. Now the company decides to change the method of depreciation with retrospective effect. The applicable reducing balance rate for this machinery would be 8% p.a. Assuming that before the effect of this change could be accounted, depreciation for the current year is already charged based on straight line method and is reflected in the depreciated value of Rs.2,97,500.

29. Straight line depreciation per annum is

- (a) Rs. 15,000                      (b) Rs. 17,500                      (c) Rs. 35,000                      (d) Rs. 52,500

30. Number of years for which depreciation has been charged on this basis is

- (a) 2 years                      (b) 3 years                      (c) 4 years                      (d) 5 years

31. If 8% depreciation was charged by the reducing balance method, WDV at the end of 1st year was

- (a) Rs. 2,72,541                      (b) Rs. 2,96,240                      (c) Rs. 3,22,000                      (d) Rs. 3,60,000

32. If 8% depreciation was charged by the reducing balance method, WDV at the end of 2nd year was

- (a) Rs. 2,72,541                      (b) Rs. 2,96,240                      (c) Rs. 3,22,000                      (d) Rs. 3,60,000

33. If 8% depreciation was charged by the reducing balance method, WDV at the end of 3rd year was

- (a) Rs. 2,72,541                      (b) Rs. 2,96,240                      (c) Rs. 3,22,000                      (d) Rs. 3,60,000

34. The extra depreciation to be provided based on the changed method during the year is

- (a) Rs. 24,959                      (b) Rs. 17,500                      (c) Rs. 10,500                      (d) Rs. 46,763

## DEPRECIATION ACCOUNTING

On the basis of the information given below answer questions 35 to 37.

In the year 2004- 2005, C Ltd. purchased a new machine and made the following payments in relation to it:

	Rs.	Rs.
Cost as per supplier's list	5,20,000	
Less: Agreed discount	<u>50,000</u>	4,70,000
Delivery charges		10,000
Erection charges		20,000
Annual maintenance charges		30,000
Additional components to increase capacity of the machine		40,000
Annual insurance premium		5,000

35. The cost of the machine is

- (a) Rs.5,40,000                      (b) Rs.5,45,000                      (c) Rs.4,70,000                      (d) Rs.5,50,000

36. If depreciation is provided @ 10% p.a. SLM, depreciation for 3rd year will be

- (a) Rs.54,000                      (b) Rs.54,500                      (c) Rs.47,000                      (d) Rs.55,000

37. If depreciation is provided @ 10% p.a. WDV, depreciation for 3rd year is

- (a) Rs.43,740                      (b) Rs.44,145                      (c) Rs.38,070                      (d) Rs.44,550

On the basis of the information given below answer questions 38 to 42

A new machine costing Rs.1 lakh was purchased by a company to manufacture a special product. Its useful life is estimated to be 5 years and scrap value at Rs.10,000. The production plan for the next 5 years using the above machine is as follows:

Year 1	5,000 units
Year 2	10,000 units
Year 3	12,000 units
Year 4	20,000 units
Year 5	25,000 units

38. The depreciation expenditure for the 1st year under units-of-production method will be

- (a) Rs.6,250                      (b) Rs.12,500                      (c) Rs.15,000                      (d) Rs.25,000

39. The depreciation expenditure for the 2nd year under units-of-production method will be

- (a) Rs.6,250                      (b) Rs.12,500                      (c) Rs.15,000                      (d) Rs.25,000

40. The depreciation expenditure for the 3rd year under units-of-production method will be

- (a) Rs.6,250                      (b) Rs.12,500                      (c) Rs.15,000                      (d) Rs.25,000



41. The depreciation expenditure for the 4th year under units-of-production method will be  
(a) Rs.6,250 (b) Rs.12,500 (c) Rs.15,000 (d) Rs.25,000
42. The depreciation expenditure for the 5th year under units-of-production method will be  
(a) Rs.6,250 (b) Rs.12,500 (c) Rs.15,000 (d) Rs.31,250.

**On the basis of the information given below answer questions 43 to 47.**

Consider the following information:

- I. Rate of depreciation under the written down method = 20%.  
II. Original cost of the asset = Rs.1,00,000.  
III. Residual value of the asset at the end of useful life = Rs.40,960.

43. The estimated useful life of the asset is  
(a) 4 years (b) 5 years (c) 6 years (d) 7 years
44. Depreciation for 1st year =  
(a) Rs. 20,000 (b) Rs. 16,000 (c) Rs. 12,800 (d) Rs. 10,240
45. Depreciation for 2nd year =  
(a) Rs. 20,000 (b) Rs. 16,000 (c) Rs. 12,800 (d) Rs. 10,240
46. Depreciation for 3rd year =  
(a) Rs. 20,000 (b) Rs. 16,000 (c) Rs. 12,800 (d) Rs. 10,240
47. Depreciation for 4th year =  
(a) Rs. 20,000 (b) Rs. 16,000 (c) Rs. 12,800 (d) Rs. 10,240

**On the basis of the information given below answer questions 48 and 49.**

On October 1, 2005 two machines costing Rs.20,000 and Rs.15,000 respectively, were purchased.

On March 31, 2009, both the machines had to be discarded because of damage and had to be replaced by two machines costing Rs.25,000 and Rs.20,000 respectively.

One of the discarded machine was sold for Rs.10,000 and against the other it was expected that Rs.5,000 would be realized. The firm provides depreciation @15% on written down value method.

48. Depreciation for the 2007-08 year =  
(a) Rs. 2,625 (b) Rs. 4,856 (c) Rs. 4,128 (d) Rs. 3,509
49. The total amount of depreciation written off on the two machines till they were discarded is  
(a) Rs.21,000 (b) Rs.15,118 (c) Rs.13,595 (d) Rs.18,194

## DEPRECIATION ACCOUNTING

On the basis of the information given below answer questions 50 to 52.

In the books of D Ltd. the machinery account shows a debit balance of Rs.60,000 as on April 1, 2008. The machinery was sold on September 30, 2009 for Rs.30,000. The company charges depreciation @20% p.a. on diminishing balance method.

50. Depreciation for 2008-09 =

- (a) Rs. 6,000                      (b) Rs. 9,000                      (c) Rs. 4,800                      (d) Rs. 12,000

51. Depreciation for 2008-09 =

- (a) Rs. 6,000                      (b) Rs. 9,000                      (c) Rs. 4,800                      (d) Rs. 12,000

52. Profit / Loss on sale =

- (a) Rs. 13,200 Profit      (b) Rs. 13,200 loss      (c) Rs. 6,800 profit      (d) Rs. 6,800 loss

53. Consider the following data pertaining to M/s. E Ltd. who constructed a cinema house:

Particulars	Rs.
Cost of second hand furniture	90,000
Cost of repainting the furniture	10,000
Wages paid to employees for fixing the furniture	2,000
Fire insurance premium	1,000
The amount debited to furniture account is	
(a) Rs.90,000                      (b) Rs.91,000                      (c) Rs.1,00,000                      (d) Rs.1,02,000	

54. H Ltd. purchased a machinery on April 01, 2004 for Rs.3,00,000. It is estimated that the machinery will have a useful life of 5 years after which it will have no salvage value. If the company follows sum-of-the-years'-digits method of depreciation, the amount of depreciation charged during the year 2008-09 was

- (a) Rs.1,00,000                      (b) Rs.80,000                      (c) Rs.60,000                      (d) Rs.20,000.

55. On August 01, 2006, K Travels Ltd. bought four Matador vans costing Rs.1,20,000 each. The company expected to fetch a scrap value of 25% of the cost price of the vehicles after ten years. The vehicles were depreciated under the fixed installment method up to March 31, 2009. The rate of depreciation charged up to March 31, 2009 was

- (a) 10.0%                      (b) 9.0%                      (c) 8.5%                      (d) 7.5%





## ANSWERS

- |         |         |         |         |         |
|---------|---------|---------|---------|---------|
| 1. (d)  | 2. (d)  | 3. (c)  | 4. (a)  | 5. (c)  |
| 6. (d)  | 7. (d)  | 8. (b)  | 9. (c)  | 10. (b) |
| 11. (b) | 12. (d) | 13. (d) | 14. (b) | 15. (c) |
| 16. (a) | 17. (a) | 18. (c) | 19. (c) | 20. (c) |
| 21. (c) | 22. (c) | 23. (c) | 24. (c) | 25. (d) |
| 26. (b) | 27. (d) | 28. (a) | 29. (b) | 30. (b) |
| 31. (c) | 32. (b) | 33. (a) | 34. (a) | 35. (a) |
| 36. (a) | 37. (a) | 38. (a) | 39. (b) | 40. (c) |
| 41. (d) | 42. (d) | 43. (a) | 44. (a) | 45. (b) |
| 46. (c) | 47. (d) | 48. (c) | 49. (b) | 50. (d) |
| 51. (c) | 52. (b) | 53. (d) | 54. (d) | 55. (d) |

