



# 36

## USE OF SPREADSHEET IN BUSINESS APPLICATIONS

We have learnt about the spreadsheet and its features that can use in business applications. The spreadsheet lends support to a number of areas of accounting. This section describes its applications in two areas: Pay roll and Depreciation accounting to illustrate the capability of spreadsheet to enable computer based accounting.

In this lesson, we shall discuss the applications of spreadsheet (using Excel) to Payroll Accounting and Asset Management Accounting.



### OBJECTIVES

*After studying this lesson you will be able to :*

- state the meaning of Payroll Accounting;
- explain the components of Payroll;
- state the meaning of Depreciation;
- explain the methods of Depreciation;
- compute the amount of annual depreciation with the help of computer and
- maintain the accounts of assets on computers.

### 36.1 PAYROLL

Every employee in an organization is paid remuneration to compensate for (or in consideration of) services rendered during a particular period. This compensation is called Salary or more popularly, Pay to the people in employment. Salary is payable with reference to a pre determined period of time (usually a month). That is why the salary is normally specified on a monthly basis. In order to avoid subjectivity in determining the salary payable to various employees, almost every modern organization follows a definite set of rules to decide the salary payable to their employees. Use of Computers for maintaining the records Salary of employees is known as Payroll accounting.



Notes

### 36.1.1 Payroll Components

Every employee, when appointed by the organization enters into a contract of service in which these pay rules are incorporated as terms and conditions of employment.

#### Current Payroll Period (Month And Year)

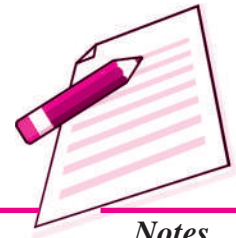
#### Earnings

- **Basic Pay (BP)** : It is the pay in the pay scale plus Grade Pay, but does not include Special Pay.
- **Grade Pay (GP)** : It is the pay to be added to the Basic Pay according to the designation of the employee and applicable pay band or scale of pay.
- **Dearness Pay (DP)** : It is that portion of Dearness Allowance, which has been declared and deemed to have been merged with the Basic Pay.
- **Dearness Allowance (DA)** : It is a compensation for erosion in the purchasing power of wage earner due to price rise. It is granted by the employer periodically as a percentage of (Basic Pay + Dearness Pay, if applicable).
- **House Rent Allowance (HRA)** : It is an amount paid to facilitate employee in acquiring on lease of residential accommodation.
- **Transport Allowance (TRA)** : It is an amount to facilitate commuting to the place of work.
- **Any Other Earning** : It may include any other allowance not included above but declared from time to time, such as Children Education Allowance, Medical Allowance, Washing Allowance, etc.

#### Deductions

- **Professional Tax (Applicable in some states) (PT)** : It is a statutory deduction according to the legislature of the State Government.
- **Provident Fund (PF)** : It is a statutory deduction, as part of social security. It is decided by the Government under the Provident Fund Act and is computed as a percentage of (Basic Pay + Dearness Pay, if applicable).
- **Tax Deduction at Source (TDS)** : It is a statutory deduction, which is deducted monthly towards Income Tax liability of an employee. It is essentially an apportionment of yearly Income Tax liability over 12 months.
- **Recovery of Loan Instalment (LOAN)** : Any amount signified by the employee for deduction on account of any loan taken up by him/her.

- **Any Other Deduction :** It may include any other deduction not included above such as Recovery of Advance against Salary, deductions on account of Food Grain Advance., .Festival Advance., etc.
  - i. **Gross :** The Gross amount of salary is the salary due to each employee, which normally consists of Basic Pay and various Allowances. The most common allowances are Dearness Allowance, House Rent Allowance, City Compensation Allowance, Transport Allowance etc. The gross salary payable to each employee is computed as an aggregate of basic pay and the applicable allowances as per the terms and conditions of employment.
  - ii. **Deductions :** Every employee is required to contribute from the monthly salary a certain percentage of basic salary towards provident fund. Accordingly, the amount of contribution is deducted from the salary due. Further, the organization as employer is required to deduct subject to provisions of Income Tax Act, a certain amount as Tax Deduction at Source (TDS) from salary of each employee. In addition to this, there may be many other voluntary and compulsory deductions from the salary due to employees.
  - iii. **Net Salary :** The net amount of salary is the difference between gross salary and deductions. Net amount of salary is to be paid to each employee at the end of a month.



Notes

Payroll is an accounting statement that is meant to show the salary payable to each employee by providing details of the gross salary, various amounts of deductions and finally net amount payable to such employee.



### INTEXT QUESTIONS 36.1

**Fill in the blanks :**

- i. Salary is normally specified on a \_\_\_\_\_ basis.
- ii. Contract of employment & Pay rules are known as \_\_\_\_\_.
- iii. \_\_\_\_\_ Allowance paid to facilitate employee in acquiring residential accommodation on lease/rent.

### 36.2 ELEMENTS USED IN PAYROLL CALCULATION

**Basic Pay Earned (BPE) .** Basic Pay Earned of an employee is the Basic Pay calculated with reference to Number of Effective Days present (NOEDP) during the month.

$$BPE = BP * NOEDP/NODM$$

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### Dearness Allowance (DA)

$$DA = BPE * (\text{Applicable Rate of DA for the Month})$$

House Rent Allowance (HRA)

$$HRA = BPE * (\text{Applicable Rate of HRA for the Month})$$

### Transport Allowance (TRA)

$$TRA = (\text{Fixed Amount}) \text{ or } (\text{On Percentage Basis})$$

**Total Earnings (TE).** It is the aggregate of all the above earning elements. Thus,

$$TE = BPE + DA + HRA + TRA$$

**Provident Fund (PF) :** This can be calculated as  $PF = BPE * PF \text{ Rate}$

**Tax Deduction at Source (TDS) :** It is usually a fixed amount deducted every month on account of TDS. In the last quarter of a year, the investment details, which are permissible for tax deduction, are received from employees to compute the quarterly and yearly income tax liability more accurately.

**Recovery of Loan Instalments (LOAN) :** It is a fixed amount to be deducted on account of Loan Installment as part of loan recovery.

**Total Deductions (TD) :** It is the total of all the above deductions. Thus,

$$TD = PF + TDS + LOAN$$

**Number of Effective Days Present (NOEDP)** is the Number of Days in a Month Minus Leave without Pay minus Unauthorised Absence, i.e.  $NOEDP = (\text{Number of Days in a Month}) - (\text{Leave without Pay}) - (\text{Unauthorised Absence})$ ; where 'Number of Days in a Month' may be denoted by NODM. The Net Salary (NS) is the amount payable to an employee. It is obtained by deducting Total Deductions (TD) from Total Earnings (TE) as given below :

$$Net \text{ Salary } (NS) = Total \text{ Earnings } (TE) - Total \text{ Deductions } (TD)$$

The basic elements used in payroll calculations are shown in following table:

Basic Pay Earned (BPE)	$BP \times \frac{NOEDP}{NODM}$ <p>Where,</p> <p>NOEDP is Number of Effective Days Present (Total number of days in a month - Leave without pay and Unauthorized absence)</p> <p>NODM is Number of Days in a Month</p>
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## Use of Spreadsheet in Business Applications

DA and HRA	BPE x Rate of DA BPE x Rate of HRA
Transport Allowance (TRA)	Fixed Amount or on Percentage Basis
Total Earnings (TE)	BPE + HRA + TRA
Provident Fund	BPE x PF rate
<b>Other Deductions :</b>	
Tax Deduction at Source Recovery of Loan Installments	These are calculated and deducted for employee.
Total Deductions (TD)	PF + TDS + Loan Repayment
Net Salary (NS)	Total Earning (TE) - Total Deduction (TD)

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Notes

### 36.3 PAYROLL DESIGN USING MS EXCEL

Column	Column Heading	Abbrev Ref	First line shows Required Formula Second line refers the cell content
A	Employee No	Emp No	Value entered directly
B	Employee Name	Emp Name	Value entered directly
C	Employee Type	Emp Type	Value entered directly
D	Deduction Days	Ded Days	Value entered directly
E	Basic Pay	BP	Value entered directly
F	No. of Effective Days Present	NOEP	= NODM - (Ded Days) = \$I\$3-D12
G	Basic Pay Earned	BPE	= BP * NOEP/NODM = E12*F12/\$I\$3
H	Dearness Allowance	DA	= BPE * DA Rate (in %) = G12*\$I\$4
I	House Rent Allowance	HRA	= If (Emp Typ = "Sup" then 40% of BPE else if (Emp Typ = "Nsup" then 30% of BPE else 0) = IF(C12="Sup", G12*\$I\$5, IF(C12="Nsup", G12*\$I\$6.0))
J	Transport Allowance	TRA	= If (Emp Typ = "Sup" then 1000 else if (Emp Typ = "Nsup" then 500 else 0) = IF(C12="Sup", \$I\$7, IF(C12="Nsup", \$I\$8.0))
K	Gross Salary	TE	= BPE + DA + HRA + TRA = G12+H12+I12+J12
N	Provident Fund	PF	= BPE * PF Rate (in %) = G12*\$I\$9
O	Tax Deduction at Source	TDS	Value entered directly
P	Loan Repayment Inst.	LOAN	Value entered directly
Q	Total Deductions	TD	= PF + TDS + LOAN = N12+O12+P12
R	Net Salary	NS	= TE - TD = K12-Q12

Figure 36.1 : Spreadsheet Columns and the Cells Content in Spreadsheet



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Variable/Type of Employee	Value in % or Fix Value	Remark
Dearness Allowance (DA)	35% of Basic Pay	I4
House Rent Allowance (HRA) :-		
Supervisory Employee (Sup)	40% of Basic Pay	I5
Non-supervisory Employee (Nsup)	30% of Basic Pay	I6
Consultant or Contract Employee	Nil	
Provident Fund (PF)	12% of BP +DA	I9

Figure 36.2 : Rules for Computing Some of Payroll Elements

### Generating the Monthly Statement

Emp. No.	Emp Name	Emp Type	Ded Days	Basic Pay	No. of Eff. Days	Basic Pay Earned	DA	HRA	TRA	Total Earnings
11	101 Sanjay	Sup	1.5	16500	26.5	15616.07	5465.63	6246.43	1000	28328.13
12	341 Nimita	Sup	0.0	34000	28.0	34000.00	11900.00	13600.00	1000	60500.00
13	461 Rohanlal	Sup	0.0	19000	28.0	19000.00	6650.00	7600.00	1000	34250.00
14	561 Aishwarya	Sup	3.0	23000	25.0	20535.71	7187.50	8214.29	1000	36937.50
15	701 Rohitkumar	Sup	1.0	15000	27.0	14464.29	5062.50	5785.71	1000	26312.50
16	941 Kapildev	Sup	0.0	40000	28.0	40000.00	14000.00	16000.00	1000	71000.00
17	1061 Anshuman	Sup	4.0	36000	24.0	30857.14	10800.00	12342.86	1000	55000.00
18	1181 Sachin	Naup	0.0	9500	28.0	9500.00	3325.00	2850.00	500	16175.00
19	1421 Priyanika	Sup	0.0	23000	28.0	23000.00	8050.00	9200.00	1000	41250.00
20	1541 Nargis	Naup	0.0	8000	28.0	8000.00	2800.00	2400.00	500	13700.00
21	1661 Ashok	Naup	0.0	8500	28.0	8500.00	2975.00	2550.00	500	14525.00
22	1781 Rajesh	Naup	0.5	9000	27.5	8839.29	3093.75	2651.79	500	15084.82
23	2021 Motilal	Cont	0.5	20000	27.5	19642.86	6875.00	0.00	0	26517.86
24	2141 Balraj	Cnst	2.0	25000	26.0	23214.29	8125.00	0.00	0	31339.29
25	<b>Total</b>					<b>275169.64</b>	<b>96309.38</b>	<b>89441.07</b>	<b>10000</b>	<b>470920.09</b>

Figure 36.3 (a) : Partial Spreadsheet Showing Payroll List upto Gross Salary

Emp. No.	Emp Name	PF	TDS	Loan Instalment	Total Deduction	Net Salary
11	101 Sanjay	1873.93	3300	0	5173.93	23154.20
12	341 Nimita	4080.00	6800	2400	13280.00	47220.00
13	461 Rohanlal	2280.00	3800	1200	7280.00	26970.00
14	561 Aishwarya	2464.29	4600	0	7064.29	29873.21
15	701 Rohitkumar	1735.71	3000	0	4735.71	21576.79
16	941 Kapildev	4800.00	8000	3000	15800.00	55200.00
17	1061 Anshuman	3702.86	7200	2600	13502.86	41497.14
18	1181 Sachin	1140.00	1900	0	3040.00	13135.00
19	1421 Priyanika	2760.00	4600	0	7360.00	33890.00
20	1541 Nargis	960.00	1600	0	2560.00	11140.00
21	1661 Ashok	1020.00	1700	1100	3820.00	10705.00
22	1781 Rajesh	1060.71	1800	0	2860.71	12224.11
23	2021 Motilal	2357.14	4000	0	6357.14	20160.71
24	2141 Balraj	2785.71	5000	0	7785.71	23553.57
25	<b>Total</b>	<b>33020.36</b>	<b>57300</b>	<b>10300</b>	<b>100620.36</b>	<b>370299.73</b>

Figure 36.3 (b) : Partial Spreadsheet for calculation of Deductions & Net Salary

**INTEXT QUESTIONS 36.2**

*Write the full form of the following :*

- |         |        |          |
|---------|--------|----------|
| i. BPE  | ii. DA | iii. TRA |
| iv. HRA | v. PF  | vi. TDS  |

**36.4 DEPRECIATION**

Depreciation is calculated according to the policy of the organisation. There are basically two methods, namely the Straight Line Method (SLM) and the Written Down Value Method (WDV). We will recall that asset accounting requires maintenance of asset.

Computation of depreciation and preparation of schedule of fixed assets for reporting in the balance sheet as part of the annual accounts. In order to prepare this report the depreciation calculation sheet is also to be prepared.

Depreciation is an allocation of the depreciable cost of a non-current (fixed) asset over its useful life. It is a way of matching the amount of a fixed cost consumed in an accounting period with the revenue it generates. Depreciation is a process of cost allocation. This is based on factors such as useful life, scrap value and cost of asset put to use. Depreciation expense is the amount of cost allocation within an accounting period. Only items that lose useful value over time can be depreciated except freehold land whose value generally does not decrease.

Depreciation is calculated according to the policy of the organization. The Companies Act 1956 in Schedule XIV lists the rate of depreciation to be used for different types of assets under Straight line and Written down Value method.

Excel worksheet supports the functions of SLN (Straight line), DB (Diminishing Balance, DDB (Double Declining Balance), SYD (Sum of Years Digit) to compute depreciation on Assets.

In this section, are concentrating only on Straight line and Written down Value method of depreciation.

**INTEXT QUESTIONS 36.3**

*Fill in the blanks :*

- \_\_\_\_\_ is an allocation of the depreciable cost of a non-current asset over its useful life.
- Depreciation is a process of cost \_\_\_\_\_.
- Excel worksheet supports the functions of Straight Line Method, Diminishing Balance Method and \_\_\_\_\_ Method.



*Notes*



Notes

### 36.5 COMPUTERISED ASSET ACCOUNTING

Assets are classified into the following categories:

- Goodwill
- Land: Free-hold land and Lease-hold land
- Building: Factory building, Office building, and Residential building. Plant and Machinery
- Furniture and Fixtures
- Vehicles
- Capital work in progress
- Others

The Companies Act, 1956 in Schedule-14 lists the rate of depreciation to be used for different class of assets under Straight Line Method (SLM) and Written Down Value Method (WDV). The prescribed rates are different under two methods. For reporting purposes, corporate enterprises may use either of the method and applicable rates. Let us now understand the computation of depreciation using the two methods.

#### 36.5.1 Straight Line Method of Depreciation

According to this method, the acquisition cost of asset and the net value is allocated over its useful life span by charging a constant amount of depreciation. This is computed as follows:

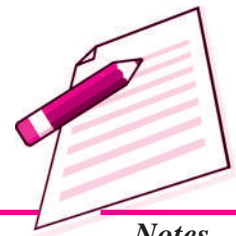
- i. Acquisition cost = Purchase value + other expenses such as transportation expenses, installation expenses and pre operating expenses.
- ii. Total Depreciable amount = Acquisition cost – Salvage value

Hence, Straight line depreciation is calculated as :  $\frac{\text{Total Depreciable Amount}}{\text{Expected Useful Life}}$

$$\text{Rate of Depreciation} = \frac{\text{Straightline Depreciation}}{\text{Total Depreciable Amount}} \times 100$$

Hereunder, we will now compute the depreciation by straight line method using the inbuilt function SLN. The depreciation is being computed on two assets: CNC machine and Packing machine. For this, enter the values in the worksheet as shown in the table:





Notes

Column	Column Heading	Abbrev Ref	First line shows Required Formula Second line refers the cell content
A	Asset Name	Asset Name	Value entered directly
B	Date of Purchase	Pur. Date	Value entered directly
C	Date of Installation	Inst. Date	Value entered directly
D	Cost of Purchase	Pur. Cost	Value entered directly
E	Installation Expenses	Inst. Exp.	Value entered directly
F	Pre-operating Expenses	Pre-op Exp	Value entered directly
G	Cost to Use	Cost to Use	= (Cost of Purchase) + (Installation Expenses) + (Pre-operating Expenses) = D5+E5+F5
H	Salvage Value	Salvage Val	Value entered directly
I	Life of Asset in Years	Life in Yrs	Value entered directly
K	Depreciation Amount	Depr.	=SLN(G5.H11.I11)

2 Calculation of Depreciation for the Financial Year 2008-09 (SLM Method)							
3	Year-Beg-Dt	01-Apr-08	Year-End Dt	31-Mar-09			
4	Asset Name	Purchase Date	Installation Date	Purchase Cost	Installation Expenses	Pre-Operation Expenses	Cost Use
5	CNC Machine	11-Jul-08	17-Jul-08	877000	11000	3000	891000
6	Packing Machine	03-May-06	07-May-06	123000	8000	2500	133500

8 Calculation of Depreciation for the Financial Year 2008-09 (SLM Method)					
9	Total No of Days		365		
10	Asset Name	Salvage Value	Life in Years	Allowed Depreciation	Depreciation
11	CNC Machine	45000	7	100%	120857.14
12	Packing Machine	17000	7	100%	16642.86

Excerpts of the Spread sheet showing the depreciable amount

### 36.5.2 Written down Value method of Depreciation

According to this method, the amount of depreciation is calculated at a fixed rate on the cost of assets as reduced by the amount of depreciation charged upto date. Function DB computes and returns the depreciation of an asset for a specified period using written down value method. The parameters for its computation are:

- Cost** : refers to the initial cost of the asset.
- Life** : also called useful life of the asset is the number of periods over which the asset is being depreciated.
- Salvage** : also called salvage value of the asset, is a value at the end of life of asset.
- Period** : is the period for which the depreciation is calculated. The unit of period is the same as that of life.

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**Month** : is the number of months in the initial year. If the month is omitted, it is assumed to be 12.

Hereunder, we will now compute the depreciation by Diminishing Balance method using the inbuilt function DB. The depreciation is being computed on two assets: CNC machine and Packing machine. For this, enter the values in the worksheet as shown in the table: The following table presents the column items and contents used in the spreadsheet.

Column	Column Heading	Abbre. Ref	First line shows Required Formula Second line refers the cell content
I	Life of Asset in Years	Life in Yrs	Value entered directly
J	Period (in Years) for which Depr. is to be computed	Period	If (Installation of asset was done after March) then take (Current Year) - (Year of Installation) else take one addl. Year. = IF (MONTH(C5) > 3, (YEAR(\$F\$3) - YEAR(C5)), (YEAR(\$F\$3) - YEAR(C5)) + 1)
K	Months in 1st Year (i.e. the year of installation)	Months in 1st Yr	No. of months between (Yr-End-Dt in 1 <sup>st</sup> Yr) & (Inst. Date) = ROUND((L5 - C5) / 30, 0)
L	Year-end Date in 1st Year (Reqd. to compute column-K)	Yr-End-Dt in 1st Yr	If (Inst. Date) was Between Jan and Mar. Take it as 31st Mar of (Year of Inst. Date) Else Take it as Next Year. = IF(AND(MONTH(C5) > 0, MONTH(C5) < 4), DATE(YEAR(C5), 3, 31), DATE(YEAR(C5) + 1, 3, 31))
M	Depreciation	Depr.	Parameters of DB function as explained above = DB(G5, H5, I5, J5, K5)

2 Calculation of Depreciation for the Financial Year 2008-09 (WDV Method)						
	Year-Beg-Dt	01-Apr-08	Year-End 31-Mar-09			
Asset Name	Purchase Date	Installation Date	Purchase Cost	Installation Expenses	Pre-Operation Expenses	Cost to Use
5 CNC Machine	11-Jul-08	17-Jul-08	877000	11000	3000	891000
6 Packing Machine	03-May-06	07-May-06	123000	8000	2500	133500

2 Calculation of Depreciation for the Financial Year 2008-09 (WDV Method)						
Asset Name	Salvage Value	Life in Years	Period	Months in 1st Yr	Yr-End-Dt in 1st Yr	Depreciation
11 CNC Machine	45000	7	1	9	31-Mar-09	231882.75
12 Packing Machine	17000	7	3	11	31-Mar-07	19433.37

Excerpts of the Spread sheet showing the depreciable amount



### INTEXT QUESTIONS 36.4

State True or False :

- In Straight Line Method, the amount of depreciation remain constant in all the years.

## Use of Spreadsheet in Business Applications

- ii. In Diminishing Balance Method, the amount of depreciation is calculated at a fixed rate on the reducing book value of an asset.
- iii. Rates of depreciation prescribed in the Companies Act, 1956 are same for all the methods of depreciation.



## WHAT YOU HAVE LEARNT

- Use of computers for maintaining the records salary of employees is known as Payroll Accounting.
- Components of Pay Roll :
  - ▶▶ Basic Pay
  - ▶▶ Grade Pay
  - ▶▶ Dearness Allowance
  - ▶▶ House Rent Allowance
  - ▶▶ Transport Allowance
- Deductions from Pay
  - ▶▶ Professional Tax
  - ▶▶ Provident Fund
  - ▶▶ Tax Deduction at Source
  - ▶▶ Recovery of Loan Installment
- Pay of employees can be easily calculated and shown with the help of Payroll accounting.
- Depreciation is an allocation of the depreciable cost of a non-current (fixed) asset over its useful life.
- Excel worksheet supports the function of SLN (Straight Line), DB (Diminishing Balance), DDB (Double Declining Balance), SYD (Sum of Years Digit) to Compute Depreciation on Assets.



## TERMINAL EXERCISE

1. What is Payroll Accounting?
2. Enumerate the components of Payroll Accounting.

## MODULE - 7

### *Application of Computers in Financial Accounting*



*Notes*

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Notes

3. Explain the various Earnings included in Payroll Accounting.
4. Explain the various items of deductions used in Payroll Accounting.
5. What is Depreciation?
6. Give the classification of Assets.
7. Which schedule of Companies Act, 1956 shows the rates of depreciation for different classes of assets?
8. Give the names of methods of depreciation supported by Excel worksheet.



### ANSWERS TO INTEXT QUESTIONS

- 36.1** i. Monthly                      ii. Terms & Conditions of Employment  
iii. House Rent
- 36.2** i. Basic Pay Earned                      ii. Dearness Allowance  
iii. Transport Allowance iv. House Rent Allowance  
v. Provident Fund                      vi. Tax Deducted at Source
- 36.3** i. Depreciation                      ii. Allocation                      iii. Sum of years digits
- 36.4** i. True                      ii. True                      iii. False