USE OF SPREADSHEET IN BUSINESS APPLICATIONS

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Learning Objectives

After studying this chapter you will be able to use spreadsheet for:

- *Computing employee's gross salary. Making necessary deductions to calculate net salary, payroll accounting.*

- *Calculation of deprecation by various methods.*

- *Loan repayment, interest calculation.*

Introduction

In the previous chapter, we have learned about the spreadsheet and its several features that can be used in business applications. In this chapter, we shall discuss the applications of spreadsheet (using Excel) to Payroll Accounting and some other select applications (Asset Management, and Loan Repayment).

3.1 PAYROLL ACCOUNTING

Every employee is paid *salary* on a pre-determined date within the framework of employee contract and related personnel policy in force from time to time in an organisation.

The computation of salary payment is based on the number of days an employee has worked, rate per grade of pay, rate of applied allowances and deductions to be made therefrom.

The preparation of salary bill should provide for the following :

- Maintaining payroll related data such as Employee No., Name, Attendance, Basic Pay, applicable Dearness and other Allowances, deductions to be made.

- Periodic payroll computations: the payroll computation includes the calculation of various earning and deduction heads, which are to be derived from basic values (such as basic salary, number of days under leave without pay (LWP) and unauthorised absence, etc) as per the formulae.

- Preparation of salary statement and employees salary slips
- Generation of advice to bank: It contains the net salary to be transferred to individual bank account of employees and other salary related statutory payments such as provident fund, tax, etc.

3.1.1 PAYROLL COMPONENTS

Every employee is under contractual relationship of service with an organisation, and is paid salary accordingly. The following elements are important for salary computation and its payment:

- **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 Government 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 the place of work, i.e. Delhi, Bhopal, Haridwar, etc.
  - **Any Other Earning** : It may include any other allowance not included above but declared from time to time, such as 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.

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- ▪ **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.

3.1.2 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.

$$BPE = BP * NOEDP/NODM$$

> *Number of Effective Days Present (NOEDP) – is the Number of Days in a Month Minus Leave without Pay minus Unauthorised Absence, i.e.*
>
> *NOEDP = (Number of Days in a Month) – (Leave without Pay) – (Unauthorised Absence) ; where (Number of Days in a Month) may be denoted by NODM.*

Dearness Allowance (DA) –

*DA = BPE * (Applicable Rate of DA for the Month)*

House Rent Allowance (HRA) –

*HRA = BPE * (Applicable Rate of HRA for the Month)*

Transport Allowance (TRA) –

TRA = (Fixed Amount) or (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 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

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 Salary (NS) = Total Earnings (TE) – Total Deductions (TD)

3.1.2.1 Template Design

Whenever we have to use a spreadsheet for any computations, the first step is to plan its layout and the template specifying the sequence of various columns, etc. The template also includes identification of cells, which will contain formulae. The advantage of preparing the template is that as a user puts in the values in the spreadsheet, the calculated results are shown correspondingly. A table giving the contents of various columns is a helpful tool to represent the template of a spreadsheet. The following example will explain this process.

Example

There are 14 employees in M/s XYZ Enterprise. The payroll calculations of these employees are given in the spreadsheet shown in Figure 3.3 (a) and Figure 3.3 (b). These figures show the layout of the spreadsheet. In a column, either a value is entered directly or else it is computed using a formula. Such data are given in Figure 3.1. The rules for computing some of the payroll elements used above are given in Figure 3.2.

Different data elements are arranged in the spreadsheet as follows:

- No. of Days in a Month (NODM) is entered in the cell G3
- DA Rate (in %) is entered in the cell G4
- HRA Rates (in %) for Supervisory (Emp Type = "Sup") and Non-supervisory (Emp Type = "Nsup") are entered in the cells G5 and G6, respectively.
- Transport Allowance for Supervisory (Emp Type = "Sup") and Non-supervisory (Emp Type = "Nsup") are entered in the cells G7 and G8, respectively.
- PF Rate (in %) is entered in the cell G9.

> *Notes*
> - *In columns I and J, nested-if function (i.e. an "IF" function within another "IF" function) has been used. If function has been introduced in Chapter 2.*
> - *The formulae in column-F and column-G use absolute address (G3) for cell G3 rather than using the relative address (G3). The absolute address is used for those cells whose reference should not change while the formula is to be copied into other cells. The concept of relative and absolute addressing of cells has been explained in Chapter 2 earlier. Absolute addresses are also used in the formulae used in columns H, I, and J.*

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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 3.1: Spreadsheet Columns and the Cells Content in Spreadsheet shown in Figure 3.3 A

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 3.2: Rules for Computing Some of Payroll Elements

The following spreadsheet shows columns A to K in Figure 3.3 a; while columns L to P are shown in Figure 3.3 b. For reference, columns A and B are repeated in columns L and M in Figure 3.3 b for reference only.

	A	B	C	D	E	F	G	H	I	J	K
1							**M/S X Y Z Enterprises**				
2							**Payroll for the Month of February, 2009**				
3				No. of Days in a Month (NOMD) For February, 2009:					28		
4				DA Rate Applicable for February, 2009:					35%		
5				HRA Rate for Supervisory Staff:					40%		
6				HRA Rate for Non-supervisory Staff:					30%		
7				Transport Allowance for Supervisory Staff					1000		
8				Transport Allowance for Non-supervisory Staff					500		
9				PF Rate:					12%		
10	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	Nsup	0.0	9500	28.0	9500.00	3325.00	2850.00	500	16175.00
19	1421	Priyanka	Sup	0.0	23000	28.0	23000.00	8050.00	9200.00	1000	41250.00
20	1541	Nargis	Nsup	0.0	8000	28.0	8000.00	2800.00	2400.00	500	13700.00
21	1661	Ashok	Nsup	0.0	8500	28.0	8500.00	2975.00	2550.00	500	14525.00
22	1781	Rajesh	Nsup	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		**Total**					275169.64	96309.38	89441.07	10000	470920.09

Figure 3.3 a : Partial Spreadsheet Showing Payroll List upto Gross Salary

	A	B	N	O	P	Q	R
2							
3							
10	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	Rohanla	2280.00	3800	1200	7280.00	26970.00
14	561	Aishwa	2464.29	4600	0	7064.29	29873.21
15	701	Rohitku	1735.71	3000	0	4735.71	21576.79
16	941	Kapilde	4800.00	8000	3000	15800.00	55200.00
17	1061	Anshun	3702.86	7200	2600	13502.86	41497.14
18	1181	Sachin	1140.00	1900	0	3040.00	13135.00
19	1421	Priyank	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		**Total**	33020.36	57300	10300	100620.36	370299.73

Figure 3.3 (b) : Partial Spreadsheet for calculation of Deductions & Net Salary

3.2 ASSET ACCOUNTING

In this section, we shall be discussing the computation of amount of depreciation to be charged on assets.

3.2.1 INTRODUCTION

Assets are resources of the organisation, which can be classified into fixed and current assets. Fixed assets are long-term assets and provide productive capability to the firm. The examples of fixed assets are land, building, plant & machinery, etc. It includes both tangible and intangible assets. Tangible assets are physical in nature, which have form, shape and size. Intangible assets are resources capable of adding value but do not have a physical dimension such as patents, copyrights, trade mark, etc.

The depreciation on fixed assets is provided to recognise the cost of the asset consumed during an accounting period since the life of such assets extends beyond single accounting year. Usually, depreciation is not provided on free hold land.

Total Amount of Depreciation = Acquisition Cost – Salvage Value (Over Life of the Asset)

> *Year-to-date depreciation is the accumulated depreciation from the date to which the asset is put to use till the current accounting year.*

Year-to-date depreciation is the accumulated depreciation from the date to which the asset is put to use till the current accounting year.

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 had studied depreciation in our previous standard (XIth Standard) in Accountancy Book Part I.

We will recall that asset accounting requires maintenance of asset register, 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.

3.2.2 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

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- 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.

3.2.2.1 Straight Line Method (SLM)

The following is the formula for computation of depreciation:

- Acquisition Cost = Purchase Value + Other expenses, such as Transportation Expenses, Installation Expenses and Pre-operating Expenses
- Total Depreciable Amount = Acquisition Cost - Salvage Value

> *The salvage value of an asset is the value, which is realisable at the end of its useful life.*

- Straight Line Depreciaion $= \dfrac{\text{Total Depreciable Amount}}{\text{Expected Useful Life}}$

- Rate of Depreciaion $= \dfrac{\text{Straight Line Depreciation}}{\text{Total Depreciable Amount}} \times 100$

Example

The depreciation calculation (using SLM) is done using the Excel spreadsheet, which is shown in Fig. 3.5 a and Fig. 3.5 b in two parts due to the limitation of the page width. In each of the spreadsheet column, either a value is entered directly or else it is computed using a formula. Such data are given in Figure 3.4.

Different data elements are arranged in the spreadsheet as follows:

- Year Beginning Date is entered in cell-C3
- Year End Date is entered in cell-F3
- First-Half Year End Date is entered in cell-E3

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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)

Figure 3.4: Column Items and their contents referred to in the Spreadsheet

The depreciation is computed by straightline method using the built-in spreadsheet function SLN in column-K. The spreadsheets are shown in Figure 3.5(a) and Figure 3.5(b).

	A	B	C	D	E	F	G
1			M/s GUNGUN Ltd.				
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 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

Figure 3.5(a) : Partial Spreadsheet Columns for Calculation of Depreiation by SL Method

		H	I	J	K
7		M/s GUNGUN Ltd.			
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

Figure 3.5(b) : Partial Spreadsheet Columns for Calculation of Depreciation by SL Method

The above-mentioned computations and spreadsheets (shown in two parts due to the constraint in the page width) give an idea of the process of depreciation calculation using SLM function. The spreadsheet

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calculation includes "Salvage Value", "Life in Years", "Allowed Depreciation", and "Depreciation" Columns with previous spreadsheet "Asset Name" Column for Reference.

3.2.2.2 Written Down Value (WDV) Method

Written Down Value (WDV) method uses the current book value as the base for computing the depreciation for the next period. It is also called Declining Balance (DB) method and uses the Excel function DB to compute the depreciation. The parameters of the function DB are as follows (Figure 3.6):

Column	Parameter	Explanation
G	Cost	Initial cost of the asset
H	Salvage	Salvage value
I	Life	Life (in years) of the asset
J	Period	Period (in years) for which the depreciation is calculated
K	Month	No. of months in the 1st year

Figure 3.6: Column Items and their contents referred in the Spreadsheet

In a column, either a value is entered directly or else it is computed using a formula. Such data are given in Figure 3.7.

Different data elements are arranged in the spreadsheet as follows:

- Year Beginning Date is entered in cell-C3
- Year End Date is entered in cell-F3
- First-Half Year End Date is entered in cell-I3

Column	Column Heading	Abbre. 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 Instalation	Inst. Date	Value entered directly
D	Cost of Purchase	Pur. Cost	Value entered directly
E	Instalation 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) + (Instalation Expenses) + (Pre-operating Expenses) = D5+E5+F5
H	Salvage Value	Salvage Val	Value entered directly

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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 (Instalation of asset was done after March) then take (Current Year) – (Year of Instalation) else take one addl. Year. = IF (MONTH(C5) > 3,(YEAR(F3)-YEAR(C5)),(YEAR(F3)-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 1st 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)

Figure 3.7: Column Items and their Contents used in Spreadsheet (in Figure 3.8 a and b)

The spreadsheet is divided in two parts; first part shows columns A to G in Figure 3.8 a; while second part shows columns H to M are shown in Figure 3.8 b. The "Asset Name" is repeated in both the figures:

	A	H	I	J	K	L	M
1			M/s GUNGUN Ltd.				
2	Calculation of Depreciation for the Financial Year 2008-09 (WDV Method)						
3		Year-Beg-Dt	01-Apr-08		Year-End	31-Mar-09	
4	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

Figure 3.8 a : Partial Spreadsheet Columns for Calculation of Depreciation by WDV Method

	A	B	C	D	E	F	G	H
1			M/s GUNGUN Ltd.					
2	Calculation of Depreciation for the Financial Year 2008-09 (WDV Method)							
10	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	

Figure 3.8 b : Partial Spreadsheet Columns for Calculation of Depreciation by WDV Method

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The above-mentioned computations and spreadsheets (shown in two parts due to the constraint in the page width) give an idea of the process of depreciation calculation using WDV function. The spreadsheet calculation includes "Salvage Value", "Life in Years", "Allowed Depreciation", and "Depreciation" Columns with previous spreadsheet "Asset Name" Column for Reference.

3.2.2.3 Schedule Forming Part of the Balance Sheet

The details of various columns are given in the following table:

Column	Column Heading	Under	First line shows Required Formula Second line refers the cell content
A	Description		Value entered directly
B	As at Apr 1, 2008	Gross Block	Value entered directly
C	Additions/Adjustments	Gross Block	Value entered directly
D	Deductions/Adjustments	Gross Block	Value entered directly
E	As at Mar 31, 2009	Gross Block	= Op. Bal + Additions/Adjustments = B8+C8-D8
F	As at Apr 1, 2008	Depreciation	Value entered directly
G	Additions	Depreciation	Value Transferred from Depreciation Computation Spreadsheet
H	Deductions	Depreciation	Value entered directly
I	As at Mar 31, 2009	Depreciation	= Op. Bal + Additions – Deductions = F8+G8-H8
J	As at Apr 1, 2008	Net Block	= Gross Block – Depreciation as on Apr 1, 2008 = B7–F7
K	As at Mar 31, 2009	Net Block	= Gross Block – Depreciation as on Mar 31, 2009 = E7-I7

Figure 3.9: Column Items and their Contents used in Spreadsheet (in Figure 3.10 a and b)

The spreadsheet is divided in two parts; first part shows columns A to E in Figure 3.10 a; while second part shows columns F to K are shown in Figure 3.10 b. The "Asset Name" is repeated in both the figures:

	A	B	C	D	E
1	M/s GUNGUN Ltd.				
2	Schedule Forming Part of the Balance Sheet as on March 31, 2009				
3	Fixed Assets				Schedule "E"
4	Description	Gross Block			
5		As on Apr 1, 2008	Additions/ Adjustments	Deductions / Adjustments	As on Mar 31, 2009
6	Building	12081.00	0.00	0.00	12081.00
7	Plant & Machinery	13942.00	2765.00	14.00	16693.00
8	Office & Other Equipment	2894.00	616.00	3.00	3507.00
9	Furniture & Fixtures	1681.00	777.00	0.00	2458.00
10	Vehicles	927.00	483.00	24.00	1386.00

Figure 3.10 a: Spreadsheet Containing Fixed Asset Schedule Showing Gross Block

	A	F	G	H	I	J	K
12				M/s GUNGUN Ltd.			
13			Schedule Forming Part of the Balance Sheet as on March 31, 2009				
14	Fixed Assets						Schedule "E"
15			Depreciation			Net Block	
16	Description	As on Apr 1, 2008	Additions	Deductions	As on Mar 31, 2009	As on Apr 1, 2008	As on Mar 31, 2009
17	Building	1812.15	604.05	0.00	2416.20	10268.85	9664.80
18	Plant & Machinery	4182.60	166.93	0.00	4349.53	9759.40	12343.47
19	Office & Other Equipment	868.20	350.70	0.00	1218.90	2025.80	2288.10
20	Furniture & Fixtures	504.30	245.80	0.00	750.10	1176.70	1707.90
21	Vehicles	370.80	277.20	0.00	648.00	556.20	738.00

*Figure 3.10 b: Spreadsheet Containing Fixed Asset Schedule
Showing Depreciation and Net Block*

The above-mentioned computations and spreadsheets (shown in two parts due to the constraint in the page width) give an idea of the process of Schedule Forming Part of the balance sheet.

3.3 LOAN REPAYMENT SCHEDULE

3.3.1 LOAN

Loan is a sum of borrowed money (termed as principal amount) for a specified period at a pre-specified rate of interest. The loan is repaid through a number of periodic (usually monthly) repayment instalments over the loan repayment period.

3.3.1.1 Calculating Interest and Repayments of Loan

Computation of repayment installments is an iterative process. The Excel's built-in function, PMT can be used to compute monthly instalments of repayment of loan. The parameters of the function PMT are as follows:

Parameter	Explanation
Rate	Interest rate per period for the loan
Nper	Total number of payments for the loan. Its unit (e.g. year) should match with the unit of the interest rate.
Pv	Present value, i.e. the loan amount
Fv	Future value, which is taken as 0, is the balance at the end of the loan period
Type	Whether payment is made at the beginning (value=1) or at the end (value=0) of the period

Figure 3.11 Explanation of Parameters of Excel's PMT Function

The layout of the spreadsheet for loan repayment calculation is given in Figure 3.13. In each column of the spreadsheet, either a value is entered directly or else it is computed using a formula. Such data are given in Figure 3.12.

Column	Column Heading	First line shows Required Formula Second line refers the cell content
A	Loan Amt.	Value entered directly
B	Loan Disbursement Date.	Value entered directly
C	Period of Loan (in Yrs).	Value entered directly
D	Rate of Interest.	Value entered directly
E	Future Value.	Value entered directly
F	Yearly Installment Amt.	= PMT(D6,C6,-A6,0,1)
G	Monthly Installment Amt.	=F6/12

Figure 3.12: Column Items and their Contents in Spreadsheet

> *Why is FV taken as zero (0) in the above calculations?*
>
> *At the end of the loan period, the (balance) amount payable will be zero assuming that the repayments are made on regular basis. Therefore, the future value (FV) is taken as zero.*

The following two examples are considered for computation of repayment schedule in the spreadsheet shown in Figure 3.13.

Example 1

A bank has given loan of Rs. 1, 00,000 to a customer for the purchase of a Plasma TV on April 1, 2007 @ 10% interest rate for a period of two years. The loan is to be repaid in 24 monthly instalments.

Example 2

Ajay has been sanctioned the bank loan of Rs. 2, 50,000 for the purchase of a car on May 15, 2008. The loan carries the rate of interest @ 11% and it is to be repaid in 36 monthly instalments.

	A	B	C	D	E	F	G
1			Happy Banking Corp.				
2			Loan Repayment Schedule				
3							
4	Loan Amt	Loan Disbursement Date	Period of Loan (in Yrs)	Rate of Interest	Future Value	Yearly Instalment Amount	Monthly Instalment
5	100000	01-Apr-07	2	10%	0.00	52380.95	4365.08
6	250000	15-May-08	3	11%	0.00	92165.11	7680.43

Figure 3.13: Spreadsheet Containing Loan Repayment Schedule

Summary

- MS-Excel is an easy and useful tool for various calculations carried out on spreadsheets. In this chapter, three examples have been taken to illustrate the ease and utility of spreadsheets. These examples are Payroll Calculation, Fixed Asset Accounting, and Loan Repayment Schedule.

- The first step in using spreadsheet is to list out the elements of the application. For each element, it is determined whether a direct value is to be entered or else it is to be computed using a formula.

- Excel has a rich library of various built-in functions including financial functions, which can be directly used to carry out various (otherwise complex) calculations. A formula may use one or more such functions.

- In these applications, some of the formulae use absolute address. The absolute address is used for those cells whose content should not change while the formula containing such cells is copied to other cells.

- If-function is also used in these applications. If-function is used to implement different action corresponding to different conditions.

- The Excel functions SLN and DB are used for computation of depreciation using Straight Line Method (SLM) and Written Down Value Method (WDVM), respectively. WDV Method is also termed as declining balance (DB) method.

- The function PMT is used to compute the loan repayment schedule.

EXERCISE

Q1. MULTIPLE CHOICE QUESTIONS

1. Which of the following options in a financial function indicates the interest for a period?

    a. FV.

    b. PV.

    c. Nper.

    d. Rate.

2. Which of the following arguments in a financial function represents the total number of payments?

    a. FV.

    b. PV.

    c. Nper.

    d. Rate.

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3. What category of functions is used in this formula:
   =PMT(C10/12,C8,C9,1)

   a. Logical.

   b. Financial.

   c. Payment.

   d. Statistical.

4. When Extend Selection is active, what is the keyboard shortcut for selecting all data up to and including the last row?

   a. [Ctrl]+[Down Arrow].

   b. [Ctrl]+[Home].

   c. [Ctrl]+[Shift].

   d. [Ctrl]+[Up Arrow].

5. Which formula would result in TRUE if C4 is less than 10 and D4 is less than 100?

   a. =AND(C4>10, D4>10).

   b. =AND(C4>10, C4<100).

   c. =AND(C4>10, D4<10).

   d. =AND(C4<10, D4<100).

6. Which of these is not an argument of the IF function?

   a. Logical_test.

   b. Value_if_false.

   c. Value_when_false.

   d. Value_if_true.

7. In what cell is the Rate for PMT function where = PMT (C8, C9, C10, C11, C12)?

   a. C8.

   b. C9.

   c. C10.

   d. C12.

Q2. ANSWER THE FOLLOWING QUESTIONS

1. What is the meaning of PV?

2. State the usage of FV?

3. What is the purpose of DB function?

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4. If an investment of Rs. 1,000 is made today, ascertain its Future Value (FV) after 2 years if the rate of interest is taken as 10%?

5. If a sum of Rs. 1000 is likely to be earned after 3 years, calculate its present value (PV).

6. What is the difference between WDV method and SLM method of depreciation?

7. Describe the two basic methods of depreciation. What functions of Excel are used for computation of depreciation?

8. Explain the importance of absolute and relative addresses. What is the basis of using relative address and absolute address?

SKILL REVIEW

1. In columns F, G, H, I, J, and N of the Payroll spreadsheet shown in Figure 3.3 (a) and Figure 3.3 (b) the absolute addresses are used. What will happen if relative addresses are used instead of absolute addresses?

2. In columns g of the spreadsheet shown in Figure 3.8 b for the depreciation calculation using WDV method (i.e. using DB function), the absolute addresses of cell F3 is used. Taking relative address of F3 instead of its absolute address will lead to wrong result when the formula is copied. Explain the reason and write down the values copied along with the correct values, which should have been copied.

3. Prepare attendance record in a spreadsheet for a class of 25 student's month wise for 10 months. Calculate the percentage of presence for each student every month. Prepare a month wise summary of every student and calculate the overall percentage of presence.

4. Use spreadsheet to prepare class timetable. It should compute and check the total number of lectures, tutorials and lab practical sessions allocated for each subject. It should also compute and check the total number of hours of engagement for each teacher.

5. Prepare the worksheets yourself for examples used in sections 3.1, 3.2, 3.3 and 3.4 respectively. Add two new more records in each worksheet (with your own assumed values) and verify whether the computations are correct.

6. Create a worksheet to keep a record of employees of M/s Opportunities Company. Employee details should include Name of Employee, Designation and Basic Salary. Enter 50 records. Calculate Dearness Allowance (DA) as 37.5% of Basic Salary, House Rent Allowance (HRA) 22.5% of Basic Salary, Provident Fund (PF) as 12% of Basic Salary, Gross Salary as Basic Salary + DA+HRA. The Income Tax (IT) as 20% of Gross Salary and Net Salary is Gross Salary – (PF+IT) for each employee. Calculate also Total Salary, Average Salary, Maximum Salary and Minimum Salary paid by the company.

7. In Section-3.3, the loan instalment is computed for a given amount of loan repayable over a specified period at a specified rate of interest. Modify this exercise by fixing the loan instalment amount and compute the loan period using the PMT function.

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ANSWERS

1. b **2**. c **3**. b **4**. c **5**. d **6**. c **7**. a

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