UNIT 20 CREATING BUSINESS SPREADSHEETS

Structure

20.0 OBJECTIVES

After completing this unit, you should be able to:

- understand the basic features of Excel such as the creation of worksheet and computation of data;
- understand the various reporting implementations of MS Excel in real-time world;
- learn about the industry level reporting requirements;
- know more about loan statements, payroll statements and project management; and
- learn how to analyze data through Ratios and various other financial statements.

20.1 INTRODUCTION

Business Spreadsheets are becoming a necessity in today's corporate world. Almost every reporting, every analysis and interpretation goes through MS Excel, and it has become a pivot for every single company. Loan Statements, Payroll Statements, Project Management, Risk Analysis and many more reporting statements can be easily prepared in MS Excel. This unit explains almost all the basic kinds of reporting and analysis sheets which can be prepared with the help of MS Excel. From banking sector to manufacturing sector MS Excel can be utilized to its fullest potential. It makes interpreting easier for the management which helps in taking the efficient decisions.

20.2 LOAN & LEASE STATEMENTS

A Loan Statement is a document recorded by the lender, a bank, financial institution. It includes all the information related to the loan, such as, Loan Amount, Interest Rate, Time Period of the Loan, Number of Installments and so on. It is provided to the borrower at every installment period, so that they can make payments before the due date to the lender. It is a legal communication between the lender and the borrower.

A Lease can be defined as a contract between the lessee and the lessor, in which the lessor (landlord) rents the property owned by him/her to the lessee (tenant). The lease statement also includes the information related to the periodical payments to be made by the lessee to the lessor. The asset/property rented is to be returned to the lessor at the end of the contract.

Now let us see how can these statements be prepared in excel. Let us take an example:

A borrowed a loan of Rs.100000 from B, for a period of 5 years to be repaid in equated quarterly installments at an interest rate of 15% p.a. You are required to prepare a loan repayment schedule as per given format:

Amount of Loan	100000
Periodicity	4
Years	5
Rate of Interest	15%
Amount of Installment	

Installment No.	Opening Balance	Interest	Installment	Closing Balance

Fig. 20.1: Loan & Lease Statement Format

We have 5 columns, which are basic to every loan/lease statement:

1) Installment Number
2) Opening Balance
3) Interest Amount
4) Installment Amount
5) Closing Balance

First of all, let us have a look at what does Periodicity means.

Periodicity is the repetitve number of time periods, in a year, at the end/at the beginning of which the installment has to be made. In the above example, periodicity is given as 4. It means that the installments are to be made Quarterly, i.e, in every 3 months. Similarily the Interest Rate is also calculated according to the periodicity. Like, in this example, interest will be calculated in every 3 months, i.e:

	A	B	C	D	E	F	G	H
1	Amount of Loan	₹ 100,000.00				Yearly	1	
2	Periodicity	4	Quarterly			Half-Yearly	2	
3	Years	5				Quarterly	4	
4	Rate of Interest	15%				Bi-Monthly	6	
5	Amount of Installment	₹ 7,196.21				Monthly	12	
6								
7	Installment No.	Opening Balance	Interest	Principal	Installment	Closing Balance		
8								
9								
10								
11								
12								
13								
14								

Fig. 20.2: Basic Structure - Loan Statement

Interest (Quarterly) = (Balance at the end of every installment)*(Rate of Interest/Periodicity)

Interest is basically compounded, whenever the installment period ends.

To prepare the Loan/Lease Statement in Excel, we will be following the below steps:

1) Create the basic structure in Excel, as given in Figure 20.2.

2) Fill in the Number of Installments under Column Installment No.

Total No. of Installments = Total No. of Years*Periodicity

3) Then fill in the Opening Balance in, which will be same as the Amount of Loan at the first Installment.

4) After that, under the Interest Column, put in the formula, as shown in Figure 20.3.

It states that **Interest =Opening Balance*(Interest Rate/Periodicity)**

C8 | fx | =B8*($B$4/$B$2)

	A	B	C
1	Amount of Loan	₹ 100,000.00	
2	Periodicity	4	Quarterly
3	Years	5	
4	Rate of Interest	15%	
5	Amount of Installment	₹ 7,196.21	
6			
7	Installment No.	Opening Balance	Interest
8	1	₹ 100,000.00	₹ 3,750.00
9			

Fig. 20.3: Formula for Interest Calculation

5) Following that, fill-in the Principal and Installment Column. Installment is already calculated using the following steps:-

   a) We will use the formula – PMT(rate,nper,pv,[fv],[type]) – This is the syntax for the PMT Formula in excel.

      i) Rate – Interest Rate

      ii) Nper – No. of Periods

      iii) Pv – Present Value

      iv) [fv] – Future Value, it is optional to fill-in

      v) [type] – Type of Installment payments, i.e, Beginning of period or End of period, it is optional tofill-in.

   b) Select a cell, type in "=PMT(B4/B2, B3*B2, -B1,0,0)".

   c) This formula can be explained as

      i) B4/B2 = Rate of Interest/Periodicity

      ii) B3*B2 = Years*Periodicity

      iii) –B1 = Amount of Loan

   d) This is how the Amount of installment will be calculated.

B5 | =PMT(B4/B2, B3*B2, -B1,0,0)

	A	B	C	D
1	Amount of Loan	₹ 100,000.00		
2	Periodicity	4	Quarterly	
3	Years	5		
4	Rate of Interest	15%		
5	Amount of Installment	₹ 7,196.21		

Fig. 20.4: Installment Amount Calculation

6) Principal is calculated as follows:-

Principal = Installment Amount – Interest Amount

D8 | =E8-C8

	A	B	C	D	E
1	Amount of Loan	₹ 100,000.00			
2	Periodicity	4	Quarterly		
3	Years	5			
4	Rate of Interest	15%			
5	Amount of Installment	₹ 7,196.21			
6					
7	Installment No.	Opening Balance	Interest	Principal	Installment
8	1	₹ 100,000.00	₹ 3,750.00	₹ 3,446.21	₹ 7,196.21

Fig. 20.5: Principal Calculation

7) Finally, closing balance is calculated as:

Closing Balance = Opening Balance – Principal Amount

F8 =B8-D8

	A	B	C	D	E	F	G
1	Amount of Loan	₹ 100,000.00				Yearly	1
2	Periodicity	4	Quarterly			Half-Yearly	2
3	Years	5				Quarterly	4
4	Rate of Interest	15%				Bi-Monthly	6
5	Amount of Installment	₹ 7,196.21				Monthly	12
6							
7	Installment No.	Opening Balance	Interest	Principal	Installment	Closing Balance	
8	1	₹ 100,000.00	₹ 3,750.00	₹ 3,446.21	₹ 7,196.21	₹ 96,553.79	

Fig. 20.6: Closing Balance Calculation

8) Now just repeat the above steps and a bank statement like in Figure 20.7 will be created.

7	Installment No.	Opening Balance	Interest	Principal	Installment	Closing Balance
8	1	₹ 100,000.00	₹ 3,750.00	₹ 3,446.21	₹ 7,196.21	₹ 96,553.79
9	2	₹ 96,553.79	₹ 3,620.77	₹ 3,575.44	₹ 7,196.21	₹ 92,978.35
10	3	₹ 92,978.35	₹ 3,486.69	₹ 3,709.52	₹ 7,196.21	₹ 89,268.83
11	4	₹ 89,268.83	₹ 3,347.58	₹ 3,848.63	₹ 7,196.21	₹ 85,420.20
12	5	₹ 85,420.20	₹ 3,203.26	₹ 3,992.95	₹ 7,196.21	₹ 81,427.24
13	6	₹ 81,427.24	₹ 3,053.52	₹ 4,142.69	₹ 7,196.21	₹ 77,284.56
14	7	₹ 77,284.56	₹ 2,898.17	₹ 4,298.04	₹ 7,196.21	₹ 72,986.52
15	8	₹ 72,986.52	₹ 2,736.99	₹ 4,459.22	₹ 7,196.21	₹ 68,527.30
16	9	₹ 68,527.30	₹ 2,569.77	₹ 4,626.44	₹ 7,196.21	₹ 63,900.87
17	10	₹ 63,900.87	₹ 2,396.28	₹ 4,799.93	₹ 7,196.21	₹ 59,100.94
18	11	₹ 59,100.94	₹ 2,216.29	₹ 4,979.92	₹ 7,196.21	₹ 54,121.02
19	12	₹ 54,121.02	₹ 2,029.54	₹ 5,166.67	₹ 7,196.21	₹ 48,954.34
20	13	₹ 48,954.34	₹ 1,835.79	₹ 5,360.42	₹ 7,196.21	₹ 43,593.92
21	14	₹ 43,593.92	₹ 1,634.77	₹ 5,561.44	₹ 7,196.21	₹ 38,032.48
22	15	₹ 38,032.48	₹ 1,426.22	₹ 5,769.99	₹ 7,196.21	₹ 32,262.49
23	16	₹ 32,262.49	₹ 1,209.84	₹ 5,986.37	₹ 7,196.21	₹ 26,276.13
24	17	₹ 26,276.13	₹ 985.35	₹ 6,210.86	₹ 7,196.21	₹ 20,065.27
25	18	₹ 20,065.27	₹ 752.45	₹ 6,443.76	₹ 7,196.21	₹ 13,621.51
26	19	₹ 13,621.51	₹ 510.81	₹ 6,685.40	₹ 7,196.21	₹ 6,936.11
27	20	₹ 6,936.11	₹ 260.10	₹ 6,936.11	₹ 7,196.21	₹ 0.00

Fig. 20.7: Bank Statement

9) Finally, we need to apply one more formula in the statement. This process is called Garbage Cleaning. This is done to limit the bank statement to not letting the Closing Balance to get below zero, into negative amount. It is applied so that the statement is stopped, whenever the closing balance is zero. The formula has to be applied at every row, baring the first row of the statement. Figure 20.8 shows the reason of it's application.

C20 =B20*($B$4/$B$2)

	A	B	C	D	E	F	G
10	3	₹92,978.35	₹3,486.69	₹3,709.52	₹7,196.21	₹89,268.83	
11	4	₹89,268.83	₹3,347.58	₹3,848.63	₹7,196.21	₹85,420.20	
12	5	₹85,420.20	₹3,203.26	₹3,992.95	₹7,196.21	₹81,427.24	
13	6	₹81,427.24	₹3,053.52	₹4,142.69	₹7,196.21	₹77,284.56	
14	7	₹77,284.56	₹2,898.17	₹4,298.04	₹7,196.21	₹72,986.52	
15	8	₹72,986.52	₹2,736.99	₹4,459.22	₹7,196.21	₹68,527.30	
16	9	₹68,527.30	₹2,569.77	₹4,626.44	₹7,196.21	₹63,900.87	
17	10	₹63,900.87	₹2,396.28	₹4,799.93	₹7,196.21	₹59,100.94	
18	11	₹59,100.94	₹2,216.29	₹4,979.92	₹7,196.21	₹54,121.02	
19	12	₹54,121.02	₹2,029.54	₹5,166.67	₹7,196.21	₹48,954.34	
20	13	₹48,954.34	₹1,835.79	₹5,360.42	₹7,196.21	₹43,593.92	
21	14	₹43,593.92	₹1,634.77	₹5,561.44	₹7,196.21	₹38,032.48	
22	15	₹38,032.48	₹1,426.22	₹5,769.99	₹7,196.21	₹32,262.49	
23	16	₹32,262.49	₹1,209.84	₹5,986.37	₹7,196.21	₹26,276.13	
24	17	₹26,276.13	₹985.35	₹6,210.86	₹7,196.21	₹20,065.27	
25	18	₹20,065.27	₹752.45	₹6,443.76	₹7,196.21	₹13,621.51	
26	19	₹13,621.51	₹510.81	₹6,685.40	₹7,196.21	₹6,936.11	
27	20	₹6,936.11	₹260.10	₹6,936.11	₹7,196.21	₹0.00	
28	21	₹0.00	₹0.00	₹7,196.21	₹7,196.21	-₹7,196.21	
29	22	-₹7,196.21	-₹269.86	₹7,466.07	₹7,196.21	-₹14,662.28	
30	23	-₹14,662.28	-₹549.84	₹7,746.05	₹7,196.21	-₹22,408.32	
31	24	-₹22,408.32	-₹840.31	₹8,036.52	₹7,196.21	-₹30,444.84	
32	25	-₹30,444.84	-₹1,141.68	₹8,337.89	₹7,196.21	-₹38,782.74	

Fig. 20.8: Reason for Garbage Cleaning

10) As we can see in Figure 20.8, there are some negative values in the statement, and the closing balance goes down below zero, to negative values. To stop this from happenning, we will apply Garbage Cleaning. Figure 20.9 shows the syntax for Garbage Cleaning and the full fledged Bank Statement.

A9 =IF(A8<$B$3*$B$2,A8+1," ")

	A	B	C	D	E	F	G
6							
7	Installment No.	Opening Balance	Interest	Principal	Installment	Closing Balance	
8	1	₹100,000.00	₹3,750.00	₹3,446.21	₹7,196.21	₹96,553.79	
9	2	₹96,553.79	₹3,620.77	₹3,575.44	₹7,196.21	₹92,978.35	
10	3	₹92,978.35	₹3,486.69	₹3,709.52	₹7,196.21	₹89,268.83	
11	4	₹89,268.83	₹3,347.58	₹3,848.63	₹7,196.21	₹85,420.20	
12	5	₹85,420.20	₹3,203.26	₹3,992.95	₹7,196.21	₹81,427.24	
13	6	₹81,427.24	₹3,053.52	₹4,142.69	₹7,196.21	₹77,284.56	
14	7	₹77,284.56	₹2,898.17	₹4,298.04	₹7,196.21	₹72,986.52	
15	8	₹72,986.52	₹2,736.99	₹4,459.22	₹7,196.21	₹68,527.30	
16	9	₹68,527.30	₹2,569.77	₹4,626.44	₹7,196.21	₹63,900.87	
17	10	₹63,900.87	₹2,396.28	₹4,799.93	₹7,196.21	₹59,100.94	
18	11	₹59,100.94	₹2,216.29	₹4,979.92	₹7,196.21	₹54,121.02	
19	12	₹54,121.02	₹2,029.54	₹5,166.67	₹7,196.21	₹48,954.34	
20	13	₹48,954.34	₹1,835.79	₹5,360.42	₹7,196.21	₹43,593.92	
21	14	₹43,593.92	₹1,634.77	₹5,561.44	₹7,196.21	₹38,032.48	
22	15	₹38,032.48	₹1,426.22	₹5,769.99	₹7,196.21	₹32,262.49	
23	16	₹32,262.49	₹1,209.84	₹5,986.37	₹7,196.21	₹26,276.13	
24	17	₹26,276.13	₹985.35	₹6,210.86	₹7,196.21	₹20,065.27	
25	18	₹20,065.27	₹752.45	₹6,443.76	₹7,196.21	₹13,621.51	
26	19	₹13,621.51	₹510.81	₹6,685.40	₹7,196.21	₹6,936.11	
27	20	₹6,936.11	₹260.10	₹6,936.11	₹7,196.21	₹0.00	

Fig. 20.9: Final Bank Statement

Syntax Used :-

Topic	Syntax	
Periodicity	VLOOKUP(C2, F1:G5, 2,FALSE)	
Installment Amount	PMT(B4/B2, B3*B2, -B1,0,0)	
Opening Balance	IF(A8<$B$3*$B$2,F8," ")	
Interest	IF(A8<$B$3*$B$2,B9*($B$4/$B$2)," ")	
Installment	IF(A8<$B$3*$B$2,$B$5," ")	
Principal	IF(A8<$B$2*$B$3,E9-C9," ")	
Closing Balance	IF(A8<$B$3*$B$2,B9-D9," ")	
Installment No.	IF(A8<$B$3*$B$2,A8+1," ")	All syntax include garbage cleaning

Fig. 20.10: Loan Statement Syntax

20.3 RATIO ANALYSIS

Ratio Analysis is one of the most important factors in the decision-making for the goodwill of an organization. There are certain ratios, which depict the present/future situation of an organization, based on which the management should take decisions. The ratio calculation is based upon the Trading Account, Profit & Loss Statement and the Balance Sheet of the organization. We will be discussing the following ratios in this chapter: -

1) **Current Ratio:** This ratio compares the Current Assets and the Current Liabilities of an organization. It measures the organization's ability to pay short-term obligations. Current Assets include Cash, Bank Balance, Accounts/Bills Receivables, and Current Liabilities includes Accounts/Bills Payables, Wages Payable, Current Proportion of a long-term debt, etc. An efficient current ratio for an organization is 2:1 (Current Assets: Current Liabilities).

2) **Quick Ratio:** Like current ratio, quick ratio also depicts the short-term capabilities of an organization, but it involves Liquid Assets instead of Current Assets. Liquid Assets includes all the current assets except inventories and prepaid expenses. It shows how efficiently the organization can pay-off their short-term obligations of upto 3 months. An efficient quick ratio for an organization is 1:1 (Quick Assets: Current Liabilities).

3) **Debt/Equity Ratio:** Debt/Equity Ratio is used to calculate the financial leverage of an organization. It is calculated by dividing an organization's total long-term debt by shareholders' funds. Long-term debt includes the loans (more than 1 year) and advances both secured and unsecured. Shareholders' funds can be calculated in two different ways, whether subtracting the total liabilities from the total assets or adding up the shareholder's funds, which includes Shareholder's Capital, Balance from

P&L Account, Reserves & Surplus, etc. A 2:1 D/E Ratio for Capital-Intensive industries, such as Automobile industry, is considered good. Whereas, a 0.5:1 D/E Ratio is considered efficient for Services/Tech Organizations.

4) **Gross Profit Ratio:** This ratio depicts the percentage of income/revenue that exceeds the COGS (Cost of Goods Sold). It is a measure of financial profitability. Higher the ratio better is the firm's profitability and executive management. It is calculated by dividing the difference of Sales and COGS by total revenue or sales.

5) **Net Profit Ratio:** This depicts the ratio of net profit of the organization and its revenue. It shows how much of each rupee collected by the organization as revenue converts into profit. This ratio is important, since an increase in revenue does not actually mean an increase in profit. It is calculated as follows:

   (Gross Profit - (Indirect or Operational Expenses) + Indirect Income)/Total Revenue or Sales

6) **Operating Cost Ratio:** It shows the efficiency of the management of the organization by comparing the Operating Expenses to Net Sales. It is calculated by dividing the Operating Cost by Net Sales. Operating Cost includes the Operating Expenses plus the COGS (Cost of Goods Sold).

7) **Return on Working Capital:** This ratio determines the return received by the organization in exchange of the working capital employed by them. It is calculated by dividing the Net profit by Working Capital. Working Capital equals to the difference between Current Assets and Current Liabilities.

8) **Return on Capital Employed:** This ratio shows the relation between the Net Profit (before interest, tax and preference dividend) and the capital employed in the organization. It is calculated by dividing Net Profit (before interest, tax and preference dividend) and Capital Employed. Capital employed can be found by two approaches:

   a) **Liabilities Approach:** By adding Shareholder's funds, Non-Current/Long-term liabilities.

   b) **Assets Approach:** By adding Non-Current Assets, i.e. Fixed Assets, Non-Current Trade Investments and Long-term Loans and Advances and Working Capital.

9) **Inventory Turnover Ratio:** This ratio is calculated by dividing Cost of Goods Sold and Average Inventory. Average inventory equals to opening inventory + closing inventory, whole divided by 2. This depicts

the number of times the inventory of the organization is converted into sales.

10) **Working Capital Turnover Ratio:** This ratio depicts the number of times, working capital of the organization has been rotated to generate sales. It equals to Net Sales divided by the Working Capital. Working Capital equals to the difference of Current Assets – Current Liabilities.

Let us see the below stated Trading Account, Profit & Loss Statement and Balance Sheet, and calculate the discussed ratios:

Balance Sheet of M/s ABC Ltd. As on 31/3/2016					
Liabilities	**Amount**		**Assets**	**Amount**	
Capital Account:		₹ 2,300,000	Fixed Assets:		₹ 3,067,500
Reserves & Surplus	₹ 500,000		Furniture	₹ 292,500	
Capital A/c	₹ 1,800,000		Land&Building	₹ 2,300,000	
Loans(Liability):		₹ 3,000,000	P&M	₹ 475,000	
Secured Loans	₹ 2,500,000		Investments:		₹ 0
Unsecured Loans	₹ 500,000		Investments	₹ 0	
Current Liabilities:		₹ 690,600	Current Assets:		₹ 3,151,807
Provisions	₹ 240,000		Closing Stock	₹ 1,429,407	
Sundry Creditors	₹ 250,600		Sundry Debtors	₹ 397,000	
BP	₹ 100,000		Cash-in-Hand	₹ 20,000	
Rent O/S	₹ 50,000		Bank Accounts	₹ 1,247,600	
Salaries O/S	₹ 50,000		BR	₹ 50,000	
Profit&Loss A/c:		₹ 228,707	Prepaid Insurance	₹ 7,800	
Opening Balance	₹ 300,000				
Current Period Profit	₹ 148,707				
Less: Transferred	-₹ 220,000				
Total		₹ 6,219,307	**Total**		₹ 6,219,307

Fig. 20.11: Trading and P&L Account

Now, we will calculate the above-discussed ratios, based on the data provided in figure 20.11 and figure 20.12.

Trading and Profit&Loss A/c of M/s ABC Ltd. For the Financial Year ending on 31/3/2016					
Particulars	Amount		Particulars	Amount	
Opening Stock		₹ 1,729,800	Sales Accounts		₹ 625,000
Purchase Accounts		₹ 43,000	Closing Stock		₹ 1,429,407
Gross Profits c/d		₹ 281,607			
Total		₹ 2,054,407	Total		₹ 2,054,407
Indirect Expenses:		₹ 253,100	Gross Profit b/f		₹ 281,607
Depreciation	₹ 57,500		Indirect Incomes:		₹ 120,200
Discount Allowed	₹ 20,000		Discount Received	₹ 200	
Electricity	₹ 10,000		Profit on Sale of Investment	₹ 120,000	
Insurance Premiums	₹ 15,600				
Rent	₹ 60,000				
Salaries	₹ 85,000				
Telephone	₹ 5,000				
Net Profit		₹ 148,707			
Total		₹ 401,807	Total		₹ 401,807

Fig. 20.12: Balance Sheet

1) **Current Ratio :**

For current ratio, we require the value of Current assets and Current liabilities.

Current Assets = ₹ 31,51,807

Current Liabilities = ₹ 6,90,600

Current Ratio = Current Assets/Current Liabilities = (31,51,807/6,90,600) = **4.56**

2) **Quick Ratio :**

For quick ratio, we require the value of Liquid Assets and Current liabilities.

Liquid Assets = Sundry Debtors + Cash-in-hand + Bank Accounts + BR = ₹ 17,14,600

Current Liabilities = ₹ 6,90,600

Quick Ratio = Liquid Assets/Current Liabilities = (17,14,600/6,90,600) = **2.48**

3) **Debt/Equity Ratio :**

For debt/equity ratio, we require the value of Total Long-term debts and Shareholder's funds.

Long-term Debt = Secured Loans + Unsecured Loans = ₹ 30,00,000

Shareholder's Funds = Reserves & Surplus + Capital A/C + P & L A/C = 25,28,707

D/E Ratio = Long-term Debt/Shareholder's Funds = (30,00,000/25,28,707) = **1.19**

4) **Gross Profit Ratio :**

For gross profit ratio, we require the value of Gross Profit and Total Sales.

Gross Profit = Sales – COGS = ₹ 2,81,607

Sales = ₹ 6,25,000

Gross Profit Ratio = Gross Profit/Sales = (2,81,607/6,25,000) = **0.45**

5) **Net Profit Ratio :**

For net profit ratio, we require the value of Net Profit and Total Sales.

Net Profit = Gross Profit - (Indirect or Operational Expenses) + Indirect Income = ₹ 1,48,707

Sales = ₹ 6,25,000

Net Profit Ratio = Net Profit/Sales = (1,48,707/6,25,000) = **0.24**

6) Operating Cost Ratio :

For operating cost ratio, we require the value of Operating Cost and Sales.

Operating Cost = Operating Expenses + COGS = Rs. 5,96,493

Sales = Rs. 6,25,000

Operating Cost Ratio = Operating Cost/Sales = (5,96,493/6,25,000) = **0.95**

7) Return on Working Capital :

For return on working capital, we require the value of Net Profit and Working Capital.

Net Profit = Gross Profit - (Indirect or Operational Expenses) + Indirect Income = Rs. 1,48,707

Working Capital = Current Assets – Current Liabilities = Rs. 24,61,207

Return on Working Capital = Net Profit/Working Capital = (1,48,707/24,61,207) = **0.06**

8) Return on Capital Employed :

For return on capital employed, we require the value of Net Profit and Capital Employed.

Net Profit = Gross Profit - (Indirect or Operational Expenses) + Indirect Income = Rs. 1,48,707

Capital Employed = Reserves & Surplus + Capital A/C + P & L A/C = 25,28,707

Return on Capital Employed = Net Profit/Capital Employed = (1,48,707/25,28,707) = **0.06**

9) Inventory Turnover Ratio :

For inventory turnover ratio, we require the value of COGS and Average Inventory.

COGS = Opening Stock – Closing Stock + Purchases = Rs. 3,43,393

Average Inventory = (Opening Inventory + Closing Inventory)/2 = Rs. 15,79,603.5

Inventory Turnover Ratio = Cost of Goods Sold/Average Inventory = **0.22**

10) Working Capital Turnover Ratio :

For working capital turnover ratio, we require the value of Net Sales and Average Working Capital.

Sales = Rs. 6,25,000

Average Working Capital = Current Assets – Current Liabilities = Rs. 24,61,207

Working Capital Turnover Ratio = Net Sales/Average Working Capital = **0.25**

Check Your Progress A

1) …………………is the repetitve number of time periods in Loan Statements.

2) What is the efficient Current Ratio for a company is …...……..?

   a) 1:1

   b) 3:2

   c) 2:1

   d) 5:3

3) What is the difference between Net Profit and Gross Profit?

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4) What is the formula for Debt/Equity ratio?

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20.4 PAYROLL STATEMENTS

Payroll refers to the amount paid by an organization to its employees. It is an important part of an organization, since if they keep their employees' morale high on the monetary terms; they will work effectively and efficiently. It is the responsibility of the payroll department to release correct and timely salaries, bonuses or incentives to their employees. To accomplish this task positively, it is always effective to maintain a Payroll Statement.

A Payroll Statement includes the data of all the employees of the organization. It includes the details like:

- Employee Name and Employee Code
- Employee Category
- Basic Pay
- Perquisites and Allowances
- Tax Slabs

- Eligibility Status for certain Perquisites and Allowances
- Deductions and Rebate Slabs
- Net Salary

Once this statement is fully prepared and verified, the Net Payment is finally released in batches, as per the organization's policies. The verifier needs to make sure that the payment is released correctly and the employees are content with the pay. If there is any kind of discrepancies such as decreased payments, wrong deductions of leaves or incorrect bonus/incentive release.

Let us take an example as follows:

M/s Alpha Ltd pays to its employees the salary on the basis of category. The gross salary of an employee consists of Basic salary + Dearness Pay + DA + HRA + TA + CCA. The GPF and IT are the two Deductions.
The components of salary are computed according to the following terms of contract of service:

Rules for payment of Basic Salary, TA and CCA are as under:

Category	Basic Salary	TA	CCA
A	25000	5000	1000
B	20000	4000	800
C	15000	3000	500

Rules for payment of DP, DA and HRA are as under:

DP	50% of Basic
DA	41% of (Basic + DP)
HRA	30% of (Basic + DP)

Rules for payment of GPF and IT are as under:

GPF	10% of Gross
IT	8% of Gross

Fig. 20.13: Payroll Statement Example

The question in figure 20.13 states the rules for the payment/deduction of the following items:

- Basic Salary, TA (Transport Allowance) and CCA (City Compensatory Allowance).
- DP (Dearness Pay), DA (Dearness Allowance) and HRA (House Rent Allowance).
- GPF (General Provident Fund) and IT (Income Tax)

As it can be seen that the employees are categorized in three groups, namely, A, B and C. Basic Salary, TA and CCA are paid, based on these categories. The statement is prepared in MS Excel in a format as shown in figure 20.14.

You are required to prepare a payroll statement in the given format making maximum use of cell referencing facility.

Code	Name	Category	Is HRA to be paid	Basic	DP	DA	HRA	TA	CCA	Gross	IT	GPF	Total Deduction	Net
			Y											
			N											
	Total													

Fig. 20.14: Payroll Statement Template

We have the Employee Code and Employee Name as their only personal details, there can be more, but there is not much need in the payroll statement for that. As shown in Figure 20.15, this is the sample data chosen for this example; randomly Employees are categorized in three categories, A, B and C. Whether the employee receives the HRA or not, is also mentioned.

Code	Name	Category	Is HRA to be paid
631	Akash	A	Yes
965	Akshay	B	No
240	Babita	C	Yes
140	Disha	B	Yes
263	Farooq	C	Yes
471	Gagandeep	A	No
550	Lokesh	C	No
997	Priya	A	No
561	Ranjan	B	Yes
987	Sudeep	A	Yes
	Total		

Fig. 20.15: Sample Employee Data

The next step is to fill in the details in the "Basic" Column of the statement. Since, every other column is calculated through Basic Salary (as shown in figure 20.13). The data should be filled carefully because it is the backbone of whole payroll statement.

The data is filled in by using the syntax shown in figure 20.16 below.

=VLOOKUP(C2, Data1, 2,FALSE)

Code	Name	Category	Is HRA to be paid	Basic	DP	DA	H
631	Akash	A	Yes	25000			
965	Akshay	B	No	20000			
240	Babita	C	Yes	15000			
140	Disha	B	Yes	20000			
263	Farooq	C	Yes	15000			
471	Gagandeep	A	No	25000			
550	Lokesh	C	No	15000			
997	Priya	A	No	25000			
561	Ranjan	B	Yes	20000			
987	Sudeep	A	Yes	25000			
	Total			205000			

Fig. 20.16: Basic Salary Syntax

In the above stated syntax in figure 20.16:

1) "C2" is the cell reference of the value that has to be located in Data1.

2) "Data1" refers to Rules for payment of Basic Salary, TA and CCA as shown in Fig. 20.13. Therefore, the basic salary differentiates according to the Category of the employee.

3) "2" refers to the column no. of Data1, from which the value has to be extracted and shown.

4) "FALSE" means that an EXACT MATCH is required to be shown.

In a similar way the other columns – DP, DA, HRA, TA and CCA are filled. The syntax for these allowances are given below:

DP	0.5*E2
DA	ROUND(0.41*(E2+F2), 0)
HRA	IF(D2="Yes", 0.3*(E2+F2), 0)
TA	VLOOKUP(C2, Data1, 3,FALSE)
CCA	VLOOKUP(C2, Data1, 4,FALSE)

Fig. 20.17: Syntax for DP, DA, HRA, TA and CCA

1) **DP:** It equals to 50% of Basic Salary.

2) **DA:** It equals to 41% of (Basic + DP). Since the resulting amount required rounding-off, "ROUND" was applied. "0" is used because the amount is rounded off to the nearest whole number.

3) **HRA:** It equals to the 30% of (Basic + DP). It also includes a condition, that whether the employee is eligible for HRA or not, therefore we used "IF" function. If Column "D" shows Yes, only then the HRA would be calculated, otherwise it would result "0".

4) **TA & CCA:** These allowances are calculated in the same way as Basic Salary, as they are shown in the same table as Basic. Refer to the figure 20.13.

Once all the Allowances are filled in, the statement would show like this:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Code	Name	Category	Is HRA to be paid	Basic	DP	DA	HRA	TA	CCA	Gross	IT	GPF	Total Deduction	Net
631	Akash	A	Yes	25000	12500	15375	11250	5000	1000					
965	Akshay	B	No	20000	10000	12300	0	4000	800					
240	Babita	C	Yes	15000	7500	9225	6750	3000	500					
140	Disha	B	Yes	20000	10000	12300	9000	4000	800					
263	Farooq	C	Yes	15000	7500	9225	6750	3000	500					
471	Gagandeep	A	No	25000	12500	15375	0	5000	1000					
550	Lokesh	C	No	15000	7500	9225	0	3000	500					
997	Priya	A	No	25000	12500	15375	0	5000	1000					
561	Ranjan	B	Yes	20000	10000	12300	9000	4000	800					
987	Sudeep	A	Yes	25000	12500	15375	11250	5000	1000					
	Total			205000	102500	126075	54000	41000	7900					

Fig. 20.18: Payroll Statement with Allowances

The last part of the statement is to calculate the Gross Salary, Tax & Deductions and Net Salary. The syntax is given below:

Gross	SUM(E2:J2)
IT	0.08*K2
GPF	0.1*K2
Total Deduction	SUM(L2:M2)
Net	K2-N2
Total	SUM(E2:E11)

Fig. 20.19: Syntax for Gross, Net and Tax & Deductions

1) **Gross:** It is the sum of Basic Salary and all the Allowances. Therefore, "SUM" function is used from column E to J, which includes Basic Salary and all the Allowances.

2) **IT (Income Tax):** It is 8% of Gross Salary. Refer to the Fig. 20.13.Refer to the Fig. 20.13.

3) **GPF:** It is 10 % of Gross Salary. Refer to the Fig. 20.13.

4) **Total Deduction:** It equals to the sum of IT and GPF.

5) **Net:** It equals to the difference between Gross Salary and Total Deduction.

The final payroll statement would look like this:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Code	Name	Category	Is HRA to be paid	Basic	DP	DA	HRA	TA	CCA	Gross	IT	GPF	Total Deduction	Net
2	631	Akash	A	Yes	25000	12500	15375	11250	5000	1000	70125	5610	7013	12623	57502
3	965	Akshay	B	No	20000	10000	12300	0	4000	800	47100	3768	4710	8478	38622
4	240	Babita	C	Yes	15000	7500	9225	6750	3000	500	41975	3358	4198	7556	34419
5	140	Disha	B	Yes	20000	10000	12300	9000	4000	800	56100	4488	5610	10098	46002
6	263	Farooq	C	Yes	15000	7500	9225	6750	3000	500	41975	3358	4198	7556	34419
7	471	Gagandeep	A	No	25000	12500	15375	0	5000	1000	58875	4710	5888	10598	48277
8	550	Lokesh	C	No	15000	7500	9225	0	3000	500	35225	2818	3523	6341	28884
9	997	Priya	A	No	25000	12500	15375	0	5000	1000	58875	4710	5888	10598	48277
10	561	Ranjan	B	Yes	20000	10000	12300	9000	4000	800	56100	4488	5610	10098	46002
11	987	Sudeep	A	Yes	25000	12500	15375	11250	5000	1000	70125	5610	7013	12623	57502
12		Total			205000	102500	126075	54000	41000	7900	536475	42918	53651	96569	439906

Fig. 20.20: Final Payroll Statement

20.5 CAPITAL BUDGETING

Capital Budgeting is a process where an organization evaluates a project, mostly long-term. The evaluation takes in many perspectives of the project, which may include construction of a new plant or a factory or a long-term investment made in a business model. It includes the assessment of all the possible cash inflows and cash outflows of the project. It is to determine whether the actual return on the investment received matches the expected return from the project and the expenses made are exceeded by the actual return from the project.

Now, to perform capital budgeting on MS Excel, we will take help of certain formulae to make the analysis of the project easier to understand and interpret. We will use the below stated example (figure 20.21) to understand the concept better.

The ABC Ltd is in the process of selecting a capital project. The detailsof 2 Capital projects A and B identified by the company are provided below:

Particulars	Project A	Project B
Rate of Interest	12%	12%
Cost of Project	-₹ 500,000.00	-₹ 550,000.00
Cash Inflows:		
Year 1	₹ 400,000.00	₹ 20,000.00
Year 2	₹ 60,000.00	₹ 500,000.00
Year 3	₹ 50,000.00	₹ 60,000.00
Year 4	₹ 70,000.00	₹ 70,000.00
Year 5	₹ 80,000.00	₹ 80,000.00

You are required to:

1 Evaluate the above capital budgeting projects and recommend the project to be implemented so that the company earns maximum profit on the basis of:

1 IRR Method

2 NPV Method using 12% Interest Rate

Fig. 20.21: Capital Budgeting Example

The question states that there are projects, which need to be compared with each other. Both of them have different Cost of the project and the Cash Inflows. They are to be evaluated based on two methods:

1) **IRR Method:** Internal Rate of Return is a rate at which the NPV – Net Present Value of both the kinds of cash flows (inflow and outflow) equals to zero. The project is desirable if the IRR exceeds the Expected Rate of Return from the project.

2) **NPV Method:** It is the difference between the PV – Present Value of the Cash Inflow and Present Value of the Cash Outflow, given a period of time.

Now, we will use formulae for IRR and NPV. In MS Excel, there are direct formulae for such kind of financial functions. The syntax used is as follows in figure 20.22:

Topic	Syntax
IRR	IRR($B$3:$B$9,$B$2)
NPV	NPV($B$2,$B$3,$B$5:$B$9)
Recommendation	IF(B13>C13,"Project A","Project B")

Fig. 20.22: Syntax for IRR & NPV

Cell References (Refer to figure 20.21):

- B3 – Cost of Project A
- B9 –Cash Inflow in Last Year for Project A
- B2 – Required Rate of Return for Project A
- B5 – Cash Inflow in First Year for Project A
- B13 & C13 – Final Recommendation for the selection of a Project.

(Replace "B" with "C" to see cell references for Project B)

Results after applying the "IRR" and "NPV" formulae are as follows:

	Project A	Project B	Recommended Project
IRR Method	16%	12%	Project A
NPV Method	₹ 27,182.07	-₹ 855.97	Project A

Fig. 20.23: IRR and NPV Results

figure 20.23 shows that it is recommended to choose Project A, since it exceeds Project B in both the methods.

Project A has an IRR of 16% whereas Project B has 12%.

Project A provides a positive result in NPV as Rs. 27,182.07 and Project B gives a negative result as Rs.855.97.

Now, what if NPV and IRR give conflicting results. For example, Project A has a better IRR, though Project B has a higher NPV. What should we choose?

Well, it is always better to choose NPV over IRR, since it is more realistic than IRR, and provides a result in amount rather than in percentage. NPV is also advantageous in the cases of Non-Normal Cash flows in a project. Non-Normal cash flows means that there is large cash outflow in between or at the end of the project period. NPV is also better when there is a comparison between projects, which have cash flows at different point of time, and are distinct in size.

20.6 DEPRECIATION ACCOUNTING

Any asset purchased faces a decrease in value, after a certain time span, like in every 6 months or a year; mostly it is a yearly depreciation. The value of the asset has to be depreciated, according to accounting norms, in the balance sheet of the company. For tangible assets, it is called Depreciation, though for non-tangible assets it is called Amortization.

There are two types of depreciation that will be discussed in this unit:

1) **Straight Line Method (SLN):** In this type of depreciation, the value of the asset decreases by the same value every year (assuming yearly depreciation). For example, if the value of the asset is Rs. 50,000 and depreciation is 10%. Then at the end of every year, the depreciation value that is deducted will be Rs. 5,000, until the asset is sold or fully depreciated.

2) **Written Down Value Method or Diminishing Balance Method (DB):** In this type of depreciation, the value of the asset decreases by a decreasing value of depreciation. Every year, there is a new value of depreciation calculated for the asset. For example, if the value of the asset is Rs. 50,000 and depreciation is 10%. Then at the end of first year, depreciation value will be Rs. 5,000. After that, in the second year it will be Rs. 4,500 {10 % of (Rs. 50,000 - Rs. 5,000)}. Similarly, in the third year 10% of Rs. 40,500, i.e. Rs. 4,050.

There are direct formulae for both the kind of depreciation techniques in MS Excel. We will use the following example (Refer figure 20.24) for understanding the topic:

Prepare a spreadsheet in MS EXCEL which accepts Cost of Asset, Life of Asset, Rate of Depreciation and Months in the first year the as input and produces a comparative schedule of Depreciation as output in the following format:

Cost of Asset -
Life of Asset -
Salvage Value -
Months in 1st year -

Fixed Asset A/C(SLN)

Year	Opening Balance	Depreciation	Closing Balance

Fixed Asset A/C(DB)

Year	Opening Balance	Depreciation	Closing Balance

Fig. 20.24: Depreciation Example

We will be following the format shown in figure 20.24. The details are in figure 20.25 below:

A	B	C	D
Cost of Asset	₹ 60,000.00	Depreciation Rate	20%
Life of Asset(in years)	3		
Salvage Value	₹ 15,000.00		
Months in the 1st year	9		

Fig. 20.25: Question Details

The details in the figure 20.25 shows the asset details, the cost, the life span, rate of depreciation and more. We need to compare both Straight Line Method and Written Down Value Method.

Formula for Straight Line Method – SLN (cost, salvage, life)

Formula for Written Down Value Method – DB (cost, salvage, life, period, [month])

- Cost – Cost of Asset
- Salvage – Salvage Value of Asset
- Life – Life of Asset
- Period – Year Number
- [Month] – Number of months in First Year

Now let us look at the answers, refer to figure 20.26 & figure 20.27.

Fixed Asset A/C(SLN)			
Year	Opening Balance	Depreciation	Closing Balance
1	₹ 60,000.00	₹ 11,250.00	₹ 48,750.00
2	₹ 48,750.00	₹ 15,000.00	₹ 33,750.00
3	₹ 33,750.00	₹ 15,000.00	₹ 18,750.00

Fig. 20.26: SLN Method

Fixed Asset A/C(DB)			
Year	Opening Balance	Depreciation	Closing Balance
1	₹ 60,000.00	₹ 16,650.00	₹ 43,350.00
2	₹ 43,350.00	₹ 16,039.50	₹ 27,310.50
3	₹ 27,310.50	₹ 10,104.89	₹ 17,205.62

Fig. 20.27: WDV or DB Method

As it can be seen from the above two figures, the asset value at the end of the third year for:

- SLN - Rs. 18,750
- WDV - Rs. 17,205.62

Therefore, the comparison states that, through SLN the asset value is higher than through WDV method, at the end of third year.

Check Your Progress B

1) What do you understand by capital budgeting?

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2) What is the syntax for DP (Dearness Pay)?

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3) What are the two types of Depreciation Formulae used in this chapter? And what is the syntax for both of them?

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4) Name the logical function used in making Payroll Statements in this chapter.

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20.7 LET US SUM UP

A Loan Statement is a document recorded by the lender, a bank, financial institution. It includes all the information related to the loan, such as, Loan Amount, Interest Rate, Time Period of the Loan, Number of Installments and so on. And, a Lease can be defined as a contract between the lessee and the lessor, in which the lessor (landlord) rents the property owned by him/her to the lessee (tenant). The lease statement also includes the information related to the periodical payments to be made by the lessee to the lessor.

Ratio Analysis is one of the most important decisive factors in the decision-making for the goodwill of an organization. There are certain ratios, which depict the present/future situation of an organization, based on which the management should take decisions. The ratio calculation is based upon the Trading Account, Profit & Loss Statement and the Balance Sheet of the organization.

Payroll refers to the amount paid by an organization to its employees. It is an important part of an organization, since if they keep their employees' morale high on the monetary terms. A Payroll Statement includes the data of all the employees of the organization. It includes the details like Employee Name, Employee Code, Employee Category, Basic Pay, Perquisites and Allowances, Tax Slabs, Eligibility Status for certain Perquisites and Allowances, Deductions and Rebate Slabs, Net Salary etc.

Capital Budgeting is a process where an organization evaluates a project, mostly long-term. The evaluation takes in many perspectives of the project, which may include construction of a new plant or a factory or a long-term investment made in a business model. It includes the assessment of all the possible cash inflows and cash outflows of the project. It is to determine whether the actual return on the investment received matches the expected return from the project and the expenses made are exceeded by the actual return from the project.

20.8 KEY WORDS

Loan Statements: A Loan Statement is a document recorded by the lender, a bank, financial institution. It includes all the information related to the loan, such as, Loan Amount, Interest Rate, Time Period of the Loan, Number of Installments and so on.

Depreciation: Depreciation is an accounting method of allocating the cost of a tangible or physical asset over its useful life or life expectancy. It represents how much of an asset's value has been used up.

Ratios: Ratio Analysis is one of the most important decisive factors in the decision-making for the goodwill of an organization. There are certain ratios, which depict the present/future situation of an organization, based on which the management should take decisions.

Capital Budgeting: Capital Budgeting is a process where an organization evaluates a project, mostly long-term. The evaluation takes in many perspectives of the project, which may include construction of a new plant or a factory or a long-term investment made in a business model.

Payroll Statement: Payroll is the total of all compensation a business must pay to its employees for a set period of time or on a given date. It is usually managed by the accounting or human resources department of a business; small-business payrolls may be handled directly by the owner or an associate.

IRR Method: Internal rate of return (IRR) is the interest rate at which the net present value of all the cash flows from a project or investment equal zero. It is used to evaluate the attractiveness of a project. If the IRR of a project exceeds a company's required rate of return, that project is desirable. If IRR falls below the required rate of return, the project should be rejected.

NPV Method: Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is used in capital budgeting and investment planning to analyze the profitability of a projected investment or project.

20.9 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress A

1) Nper
2) c) 2: 1

20.10 TERMINAL QUESTIONS

1) Explain the steps to create a Loan Statement.
2) What is the difference between NPV approach and IRR approach? Which approach should be chosen when their results do not match?
3) What is the difference between SLN and DB Method of Depreciation? How are they implemented in MS Excel?
4) What is capital budgeting? Explain its two methods.
5) Explain the components of a Payroll Statements.

Case Study:

The XYZ Ltd is in the process of selecting a capital project. The detailsof 3 Capital projects X, Y and Z identified by the company are provided below:

Particulars	Project X	Project Y	Project Z
Rate of Interest	14%	14%	14%
Cost of Project	-₹ 300,000.00	-₹ 450,000.00	-₹ 350,000.00
Cash Inflows:			
Year 1	₹ 200,000.00	₹ 20,000.00	₹ 15,000.00
Year 2	₹ 30,000.00	₹ 300,000.00	₹ 25,000.00
Year 3	₹ 50,000.00	₹ 60,000.00	₹ 250,000.00
Year 4	₹ 60,000.00	₹ 55,000.00	₹ 35,000.00
Year 5	₹ 65,000.00	₹ 60,000.00	₹ 40,000.00

You are required to:

1 Evaluate the above capital budgeting projects and recommend the project to be implemented so that the company earns maximum profit on the basis of:

1 IRR Method

2 NPV Method using 14% Interest Rate

1) How do I change the layout in Excel?
2) How do I make Excel fit the screen?
3) What is page layout in Excel?
4) What are the elements of Excel screen?

Note: These questions are helpful to understand this unit. Do efforts for writing the answer of these questions but do not send your answer to university. It is only for yours practice.

SOME USEFUL BOOKS

- Fundamentals of Computers, “Balagurusamy”, Mcgraw Hill, 2009.
- Computing Fundamentals: Introduction to Computers, “FaitheWempen”, Wiley, 2014.
- Fundamentals of Computers, “Rajaraman V and Adabala N”, Prentice Hall of India, 2014.
- Fundamentals of Computers and Information System, “Niranjan Shrivastava”, DreamTech Press, 2013.
- Computer Fundamentals, “Anita Goel”, Pearson, 2010.
- Microsoft Excel Data Analysis and Business Modeling, “Wayne Winston”, Microsoft Press, 2016.
- YouTube Black Book: How to Create a Channel, Build an Audience and Make Money on YouTube, “Christopher Sharpe”, Kindle Edition, Amazon Asia-Pacific Holdings, 2020.
- Microsoft PowerPoint, “Lambert Joan”, Microsoft Press, 2016.
- Excel 2019 All-in-One for Dummies, “Greg Harvey”, Wiley, 2020.
- Mastering MS Office: Computer Skill Development - Be Future Ready, “Bittu Kumar”, V&S Publishers, 2017.
- Computers for Beginners/The Basics, wiki books, online https://en.wikibooks.org.
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