**Practical No. 1**

***What if analysis.***

* To find total expenditure and saving
* In B13 type =SUM(B2:B11) and press enter
* In C14 type =C2-B13 and press enter
* To create scenario
* Select data tab, in the data tools select what-if analysis -> scenario manager
* In add scenario dialogue box, which appears. Click the add button.
* In the ‘Scenario Name’ type -> Original Budget.
* In ‘Changing Cells’ type -> B2:B11. Click ok.
* Scenario values dialog box opens to retain original values. Click ok.
* To create new scenario
* Click on add button again.
* In scenario and type New Budget. Then click ok.
* We get scenario values dialogue box. Change the values in B6, B7,B8 and B9 to 2500,2500,500 and 400 respectively. Then click ok.

**Practical No. 2**

***Goal Seek***

* Select A1 and type Current Sales Data.
* Select A2 and type Items Sold.
* Select A3 and type Profit Per Item.
* Select A4 and type Total Profit.
* In B2 type 1000, in B3 type 25 and in B4 type =B2\*B3.
* Select D1 and type Future Sales Data.
* Select D2 and type Items Sold.
* Select D3 and type Profit Per Item.
* Select D4 and type Total Profit.
* In E2 type 1000 and in E4 type =E2\*E3.
* Goal Seek
* Select data tab then in data tools select what if analysis then select goal seek.
* In goal seek dialog box which appears, “In Set Cell” type E4.
* In “To Value” type 3000.
* In “By Changing Cells” type E3 then click ok.

**Practical No. 3**

***Import the legacy data from different sources such as (Excel, SqlServer, Oracle etc.) and load in the target system. Make data source in Microsoft Excel.***

* Get data -> Microsoft Excel -> choose sheet from Excel -> OK -> Load
* The data will be displayed on navigator.
* Now you can Go to Edit Queries and make changes to various fields
* The fields of the table are shown on right side of screen. It has ∑ symbol before some field name such values are called Measures and other fields are called Dimensions.

**Practical No. 4**

***Perform the Extraction Transformation and Loading (ETL) process to construct the database in Power BI.***

* Get Data -> OData feed -> Put URL- <https://services.odata.org/v3/Northwind/Northwind.svc> -> OK -> Connect.
* Select tables such as product and order table -> Load.
* Open Edit Queries (New window will be displayed as Power Query Editor)
* Choose product ID, Name, Quantity Per Unit ,Unit In Stock -> OK
* To change Data type
* Select Column -> Click on Data type in Ribbon.
* To change Name of the column
* Double click on column -> Change Name
* To change Value
* Click Replace Value OR Right Click on Value
* To Load another table
* Go to Recent Sources -> Tick Order Table -> OK
* Go to Edit Queries -> Search Column Order\_Details OR Click on the icon (which shows all the hidden columns) -> Select Product ID, Unit Price, Quantity -> Save and Apply.
* Add column -> custom column -> Name- Total
* Formula = select Order\_Details.Unit Price\*Order\_Details.Quantity -> OK -> Save File and Apply.
* On Dashboard -> On left side -> click on Relationship Icon.

**Practical No:5**

***Implementation of Classification algorithm in R Programming.***

* Open R tool
* Write on Console
* Code
* rainfall<-c(799,1174.8,865.1,1134.6,635,918.5,998.6,784.2,985,882.8,1071)
* rainfall.timeseries<-ts(rainfall,start=c(2012,1),frequency=12)
* print(rainfall.timeseries)
* plot(rainfall.timeseries)

**Practical No:6**

***Practical Implementation of Decision Tree using R Tool***

* Open R tool
* Write on Console
* Code
* 4. Go to package -> find "party" package and install.
* Load party package
* Library(party)
* print(head(readingSkills))
* input.dat<-readingSkills[c(1:105),]
* output.tree <-ctree(nativeSpeaker ~age+shoeSize+score,data=input.dat)
* plot(output.tree)

**Practical No:7**

***k-means clustering using R***

* Open R tool
* Write on Console
* Code
* require(datasets)
* data(iris)
* str(iris)
* summary(iris)
* head(iris)
* iris.new<-iris[,c(1,2,3,4)]
* head(iris.new)
* result<-kmeans(iris.new,3)
* result$size
* result$cluster
* plot(iris.new[c(1,2)],col=result$cluster)
* plot(iris.new[c(3,4)],col=result$cluster)

**Practical No:8**

***Prediction Using Linear Regression***

* Open R tool
* Write on Console
* Code
* x<-c(151,174,138,186,128,136,179,163,152,131)
* y<-c(63,81,56,91,47,57,76,72,62,48)
* relation<-lm(y ~ x)
* print(relation)
* print(summary(relation))
* a<-data.frame(x=170)
* result<-predict(relation,a)
* print(result)