Q1.

Create Table and Partitions

```
SQL> create table sales(
  2  sid NUMBER(5),
  3  pid NUMBER(5),
  4  pname VARCHAR2(30),
  5  salesamt NUMBER(10),
  6  profit NUMBER(10),
  7  location VARCHAR2(30))
  8  PARTITION BY LIST (location)
  9  (
 10  PARTITION sales_north VALUES ('Delhi','Jammu'),
 11  PARTITION sales_west VALUES ('Kolkata'),
 12  PARTITION sales_south VALUES ('Mumbai','Pune')
 13  )enable row movement;

Table created.
```

Insert rows into table

```
SQL> insert into sales values(1, 101,'Biscuit', 500, 50000, 'Mumbai');

1 row created.

SQL> insert into sales values(2, 102,'Chips', 200,10000, 'Pune');

1 row created.

SQL> insert into sales values(3, 103,'Cake', 75, 5000, 'Kolkata');

1 row created.

SQL> insert into sales values(4, 104,'Coffee', 100, 20000, 'Jammu');

1 row created.

SQL> insert into sales values(5, 105,'Tea', 150, 25000, 'Delhi');

1 row created.

SQL> insert into sales values(6, 106,'Chocolate',250, 15000, 'Delhi');

1 row created.

SQL> insert into sales values(7, 107,'Waffles', 50, 8000, 'Delhi');

1 row created.
```

Display sales of Delhi

```
SQL>
    select * from sales PARTITION(sales_north) where location='Delhi';

      SID         PID PNAME                           SALESAMT     PROFIT LOCATION
---------- ---------- ------------------------------ ---------- ---------- ------------------------------
        5         105 Tea                                 150      25000 Delhi
        6         106 Chocolate                           250      15000 Delhi
        7         107 Waffles                              50       8000 Delhi
```

Display total profit of Delhi Region

```
SQL> select SUM(profit) from sales PARTITION(sales_north) where location='Delhi';

SUM(PROFIT)
-----------
      48000
```

Display Contents of each partition

```
SQL> select * from sales PARTITION(sales_north);

      SID         PID PNAME                           SALESAMT     PROFIT LOCATION
---------- ---------- ------------------------------ ---------- ---------- ------------------------------
        4         104 Coffee                              100      20000 Jammu
        5         105 Tea                                 150      25000 Delhi
        6         106 Chocolate                           250      15000 Delhi
        7         107 Waffles                              50       8000 Delhi
```

```
SQL> select * from sales PARTITION(sales_west);

      SID         PID PNAME                           SALESAMT     PROFIT LOCATION
---------- ---------- ------------------------------ ---------- ---------- ------------------------------
        3         103 Cake                                 75       5000 Kolkata
```

```
SQL> select * from sales PARTITION(sales_south);

      SID         PID PNAME                           SALESAMT     PROFIT LOCATION
---------- ---------- ------------------------------ ---------- ---------- ------------------------------
        1         101 Biscuit                             500      50000 Mumbai
        2         102 Chips                               200      10000 Pune
```

Merge contents of 2 partitions sales_west and sales_south to sales_s_w

```
SQL> ALTER TABLE sales
  2   MERGE PARTITIONS sales_west, sales_south
  3   INTO PARTITION sales_s_w
  4   STORAGE(MAXEXTENTS 20);

Table altered.
```

Display the partition sales_s_w

```
SQL> select * from sales PARTITION(sales_s_w);

     SID        PID PNAME                             SALESAMT     PROFIT LOCATION
---------- ---------- ---------------------------- ---------- ---------- ----------------------------
         3        103 Cake                               75       5000 Kolkata
         1        101 Biscuit                           500      50000 Mumbai
         2        102 Chips                             200      10000 Pune
```

Q.3.

Create Customer Table

```
SQL> create table Customer(
  2  cid NUMBER(5),
  3  productid NUMBER(5),
  4  pname VARCHAR2(30),
  5  year date,
  6  location VARCHAR2(30),
  7  profit NUMBER(10));

Table created.
```

```
SQL> insert into Customer values(1, 101,'Biscuit', to_date('2012','yyyy'), 'Mumbai',50000 );

1 row created.

SQL> insert into Customer values(2, 102,'Chips', to_date('2015','yyyy'),'Pune',10000);

1 row created.

SQL> insert into Customer values(3, 103,'Cake', to_date('2012','yyyy'), 'Kolkata', 5000);

1 row created.
```

```
SQL> select pname, year, sum(profit) from Customer group by rollup(pname,year,profit);

PNAME                          YEAR        SUM(PROFIT)
------------------------------ ----------- -----------
Tea                            01-FEB-15         25000
Tea                            01-FEB-15         25000
Tea                                              25000
Cake                           01-FEB-12          5000
Cake                           01-FEB-12          5000
Cake                                              5000
Chips                          01-FEB-15         10000
Chips                          01-FEB-15         10000
Chips                                            10000
Coffee                         01-FEB-14         20000
Coffee                         01-FEB-14         20000

PNAME                          YEAR        SUM(PROFIT)
------------------------------ ----------- -----------
Coffee                                           20000
Biscuit                        01-FEB-12         50000
Biscuit                        01-FEB-12         50000
Biscuit                                          50000
Waffles                        01-FEB-12          8000
Waffles                        01-FEB-12          8000
Waffles                                           8000
Chocolate                      01-FEB-17         15000
Chocolate                      01-FEB-17         15000
Chocolate                                        15000
                                               133000

22 rows selected.


SQL> select pname, location, sum(profit) from Customer group by rollup(pname,location,profit);

PNAME                          LOCATION                       SUM(PROFIT)
------------------------------ ------------------------------ -----------
Tea                            Delhi                                25000
Tea                            Delhi                                25000
Tea                                                                 25000
Cake                           Kolkata                               5000
Cake                           Kolkata                               5000
Cake                                                                 5000
Chips                          Pune                                 10000
Chips                          Pune                                 10000
Chips                                                               10000
Coffee                         Jammu                                20000
Coffee                         Jammu                                20000

PNAME                          LOCATION                       SUM(PROFIT)
------------------------------ ------------------------------ -----------
Coffee                                                              20000
Biscuit                        Mumbai                               50000
Biscuit                        Mumbai                               50000
Biscuit                                                             50000
Waffles                        Delhi                                 8000
Waffles                        Delhi                                 8000
Waffles                                                              8000
Chocolate                      Delhi                                15000
Chocolate                      Delhi                                15000
Chocolate                                                           15000
                                                                   133000

22 rows selected.
```

Q2.

```
> data(mtcars)
> head(mtcars)
                   mpg cyl disp  hp drat    wt  qsec vs am gear carb
Mazda RX4         21.0   6  160 110 3.90 2.620 16.46  0  1    4    4
Mazda RX4 Wag     21.0   6  160 110 3.90 2.875 17.02  0  1    4    4
Datsun 710        22.8   4  108  93 3.85 2.320 18.61  1  1    4    1
Hornet 4 Drive    21.4   6  258 110 3.08 3.215 19.44  1  0    3    1
Hornet Sportabout 18.7   8  360 175 3.15 3.440 17.02  0  0    3    2
Valiant           18.1   6  225 105 2.76 3.460 20.22  1  0    3    1
> summary(mtcars)
      mpg             cyl             disp             hp             drat             wt
 Min.   :10.40   Min.   :4.000   Min.   : 71.1   Min.   : 52.0   Min.   :2.760   Min.   :1.513
 1st Qu.:15.43   1st Qu.:4.000   1st Qu.:120.8   1st Qu.: 96.5   1st Qu.:3.080   1st Qu.:2.581
 Median :19.20   Median :6.000   Median :196.3   Median :123.0   Median :3.695   Median :3.325
 Mean   :20.09   Mean   :6.188   Mean   :230.7   Mean   :146.7   Mean   :3.597   Mean   :3.217
 3rd Qu.:22.80   3rd Qu.:8.000   3rd Qu.:326.0   3rd Qu.:180.0   3rd Qu.:3.920   3rd Qu.:3.610
 Max.   :33.90   Max.   :8.000   Max.   :472.0   Max.   :335.0   Max.   :4.930   Max.   :5.424
      qsec             vs               am              gear            carb
 Min.   :14.50   Min.   :0.0000   Min.   :0.0000   Min.   :3.000   Min.   :1.000
 1st Qu.:16.89   1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.:3.000   1st Qu.:2.000
 Median :17.71   Median :0.0000   Median :0.0000   Median :4.000   Median :2.000
 Mean   :17.85   Mean   :0.4375   Mean   :0.4062   Mean   :3.688   Mean   :2.812
 3rd Qu.:18.90   3rd Qu.:1.0000   3rd Qu.:1.0000   3rd Qu.:4.000   3rd Qu.:4.000
 Max.   :22.90   Max.   :1.0000   Max.   :1.0000   Max.   :5.000   Max.   :8.000
```

```
> ran <- sample(1:nrow(mtcars), 0.9 * nrow(mtcars))
> ran
 [1] 12 27  5  6 11  9 21 19  2 18 22  1 23  4  7 10 25 13 30  8 31 16 15 29 14 28  3 26
>
```

```
> mtcars_norm <- mtcars[2:11]
> mtcars_norm
                  cyl  disp  hp drat    wt  qsec vs am gear carb
Mazda RX4           6 160.0 110 3.90 2.620 16.46  0  1    4    4
Mazda RX4 Wag       6 160.0 110 3.90 2.875 17.02  0  1    4    4
Datsun 710          4 108.0  93 3.85 2.320 18.61  1  1    4    1
Hornet 4 Drive      6 258.0 110 3.08 3.215 19.44  1  0    3    1
Hornet Sportabout   8 360.0 175 3.15 3.440 17.02  0  0    3    2
Valiant             6 225.0 105 2.76 3.460 20.22  1  0    3    1

> ##extract training set
> train <- mtcars[ran,]
> train
             mpg cyl  disp  hp drat    wt  qsec vs am gear carb
Merc 450SE  16.4   8 275.8 180 3.07 4.070 17.40  0  0    3    3
Porsche 914-2 26.0   4 120.3  91 4.43 2.140 16.70  0  1    5    2

> ##extract testing set
> test <- mtcars[-ran,]
> test
                  mpg cyl  disp  hp drat    wt  qsec vs am gear carb
Chrysler Imperial 14.7   8 440.0 230 3.23 5.345 17.42  0  0    3    4
Toyota Corolla    33.9   4  71.1  65 4.22 1.835 19.90  1  1    4    1
```

```
#Plot graph
pairs(mtcars[1:11], main="mtcars Data",pch=21)
```

mtcars Data