

Experiment 01:

Aim: To calculate the molar absorptivity coefficient from the given data of concentration vs absorbance for 100 ml/g of Cu at 610 nm.

Theory:- Excel is a very powerful tool for calculating and plotting for a large variety of data. In this exercise the spreadsheet program from Microsoft Excel will be used for exploring various calculations and plotting graphical relationships. Excel can fit curves to best fit for linear regression.

Procedure:-

1. Launch the program Microsoft Excel.
2. Enter the given data into first two columns in the spreadsheet.
3. Reserve the first row for column labels.
4. The x value must be entered to the left of the y value in the spreadsheet.
5. Highlight the set of data that we are plotting.
6. Then click the Insert tab at the top followed by scatter.
7. Choose the scatter plot will show data points only with no connecting line option labelled as scatter with only markers. Scatter plot will be shown on screen.
8. First click inside the chart on the Layout tab at the top right section of tool bar,
9. Click on chart title to add a little. Then click on axis title for horizontal (x-axis) and vertical (y-axis).

10. Add a trendline to the plotted data points. A trendline represents the best possible linear fit to your data.
11. Click on one of the data points - all the points will be highlighted. Then click on trendline by right click and choose more trendline options.
12. The format trendline window will appear.
13. Linear option is selected and then select display equation on chart.
14. The equation that appears on the graph is the equation of best fit trendline.
15. The closer the R^2 value is to one, the better the line. This will be the best fit linear curve in the form of $y = mx + c$. You can note down slope and intercept.

Result:-

Molar absorptivity coefficient - $\epsilon_0 = 0.118 \text{ M}^{-1} \text{ cm}^{-1}$.

Experiment -02:

Aim: To calculate molar absorptivity coefficient from the given set of data of concentration (10^{-4} M) and Absorbance.

Theory: As discussed before .

Result: Graph was successfully plotted .

$$\text{molar absorptivity coefficient } \epsilon = 0.094 \text{ M}^{-1}$$



Experiment-03:

Aim:- To plot a graph between concentration M mole and conductance (ms^{-1}) using Ceeell.

Theory:- As discussed before.

Result:- graph was successfully plotted



Experiment 04:-

Aim:- To plot a graph between conductance vs volume of NaOH and determine the equivalence point using excel.

Procedure:

1. Open the program Microsoft Excel.
2. Enter the given data into the first two columns of the spreadsheet.
3. Reserve the 1st row for column labels.
4. The x value must be entered to the left of the y values in the spreadsheet.
5. Highlight the set of data that we are plotting. Then click on insert tab at the top followed by scatter.
6. Choose the scatter graph that shows data points only, with no connecting line option.
7. Select chart title to add to title for horizontal and vertical axis.
8. Add a trendline to the plotted data points.
9. Select data to add x-axis and y-axis value. Add a trendline to the plotted data points.
10. The point of intersection of the two trendline gives the equivalence point.

Result :- Equivalence point = 44 ml.

Experiment 5:-

Aim:- Using spreadsheet plot a graph between pH and volume.

$\frac{\Delta \text{pH}}{\Delta V}$ vs volume for pH metr titiations of strong acid. vs strong base

Vts

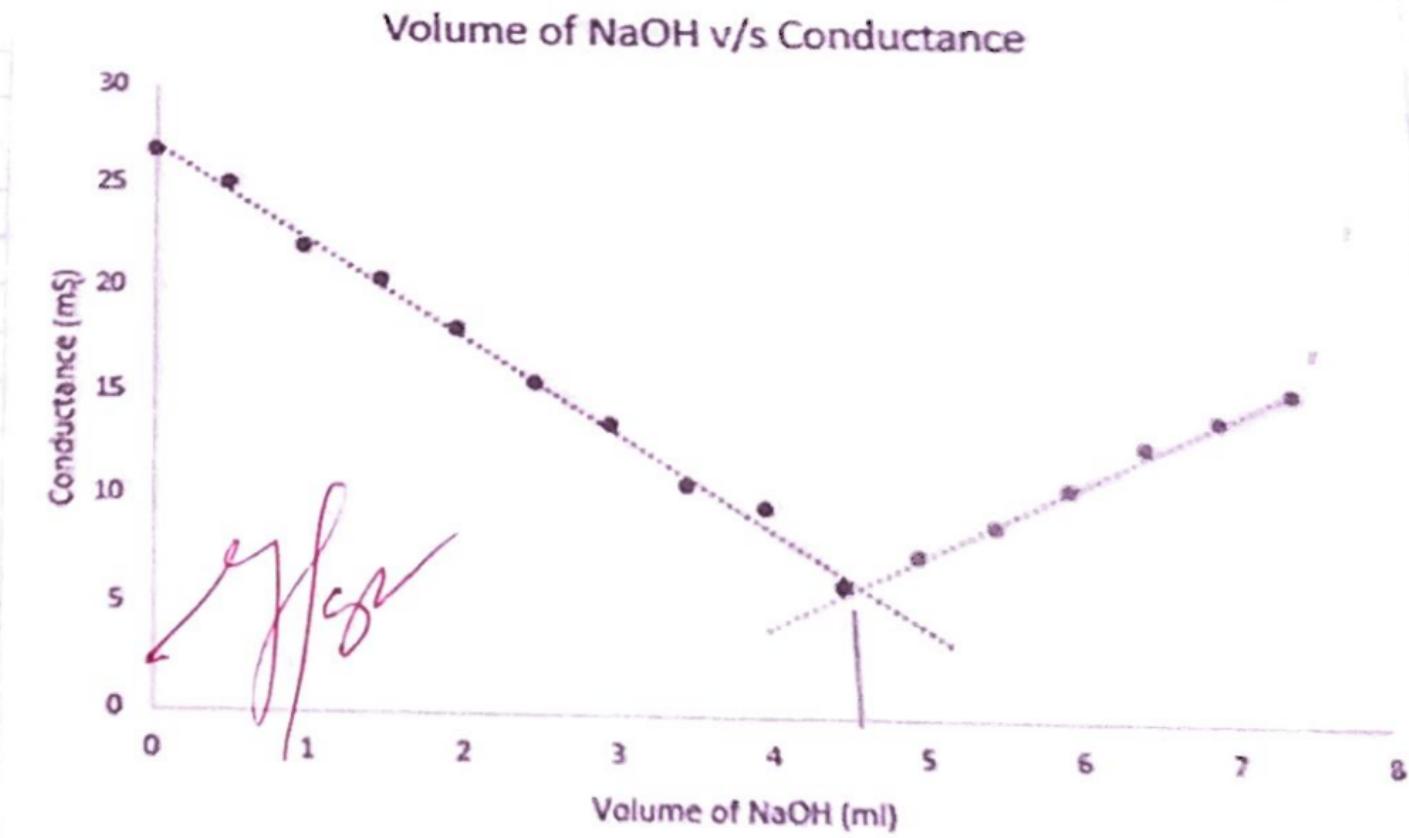
Procedure:

1. Launch the program Microsoft Excel.
2. Enter the given data as first two columns in the spreadsheet.
3. calculate ΔpH , ΔV and $\frac{\Delta \text{pH}}{\Delta V}$.
4. highlight the set of data we are plotting. Then click the tab at the top followed by scatter.
5. Scatter plot will show on the screen.
6. Select data and add series x and series Y data and then.
7. Click on secondary axis to get two plots.

To Plot A Graph Between Volume of NaOH and Conductance

Exp-04

volume of NaOH added ml	conductance(mS)
0	26.7
0.5	25.15
1	22
1.5	20.4
2	18.09
2.5	15.54
3	13.57
3.5	10.7
4	9.7
4.5	6.1
5	7.48
5.5	8.88
6	10.75
6.5	12.88
7	14.14
7.5	15.52



Experiment 06:-

Aim:- To plot the PV isotherm for CO_2 gas at different temperature (260, 273, 307, 350, 400, 450) Kelvin.

$$P = \frac{RT}{V-b} - \frac{a}{V^2}$$

Given $a = 3.64$, $b = 0.04267$.

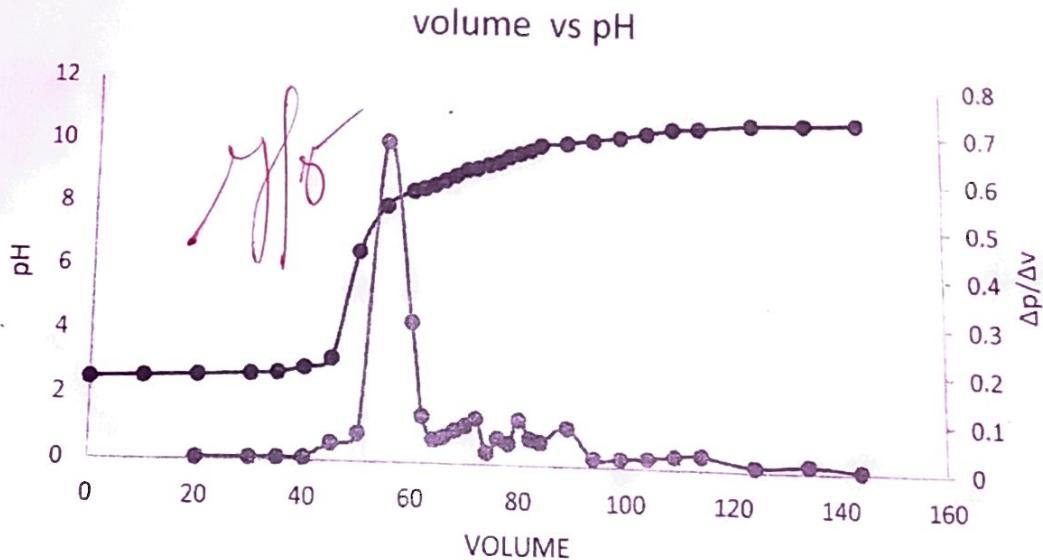
Theory:- Excel is a powerful tool, now-a-days used for calculations and plotting etc. for the large variety of data. In this exercise, the spreadsheet programs from MS Excel will be used for exploring various calculations and plotting graphical relationships.

Excel can fit curves to best fit for linear & non-linear data. Various steps are followed for the above.

Procedure:-

1. MS Excel program was launched.
2. The given data of volume was entered in the spreadsheet to calculate the pressure at different temperature.
3. In the above given pressure formula was inserted at one temperature.
4. The cursor was dragged for other temperatures and the formula was adjusted accordingly.
5. The graph was plotted by using same procedure as in excel.
6. The graph was zoomed using format toolbars.

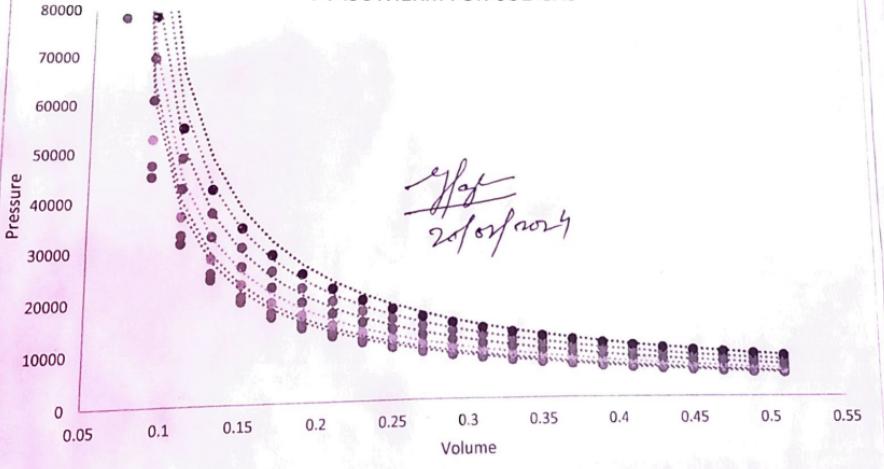
volume	pH	Δp	Δv	$\Delta p/\Delta v$
0	2.5			
10	2.55	0.05	10	0.005
20	2.61	0.06	10	0.006
30	2.68	0.07	10	0.007
35	2.72	0.04	5	0.008
40	2.91	0.19	5	0.038
45	3.2	0.29	5	0.058
50	6.55	3.35	5	0.67
55	8.01	1.46	5	0.292
60	8.5	0.49	5	0.098
62	8.6	0.1	2	0.05
64	8.71	0.11	2	0.055
66	8.85	0.14	2	0.07
68	9.01	0.16	2	0.08
70	9.2	0.19	2	0.095
72	9.25	0.05	2	0.025
74	9.36	0.11	2	0.055
76	9.45	0.09	2	0.045
78	9.64	0.19	2	0.095
80	9.75	0.11	2	0.055
82	9.85	0.1	2	0.05
84	10.01	0.16	2	0.08
89	10.1	0.09	5	0.018
94	10.2	0.1	5	0.02
99	10.31	0.11	5	0.022
104	10.45	0.14	5	0.028
109	10.6	0.15	5	0.03
114	10.65	0.05	5	0.01
124	10.8	0.15	10	0.015
134	10.85	0.05	10	0.005
144	10.91	0.06	10	0.006



Result: The PV isotherm for CO₂ gas was successfully plotted.

VOLUME	P at T 260K	P at T 273K	P at T 304K	P at T 350K	P at T 400K	P at T 450K
0.05	293447.138	308192.29	343353.82	395528.993	452241.135	508953.28
0.07	78351.1787	82305.881	91736.323	105729.883	120940.275	136150.67
0.09	45222.2843	47505.868	52951.336	61031.7075	69814.7204	78597.733
0.11	31804.3273	33409.585	37237.507	42917.6497	49091.7177	55265.786
0.13	24537.1632	25774.791	28726.056	33105.3528	37865.4582	42625.564
0.15	19978.3508	20985.357	23386.68	26949.9338	30823.0354	34696.137
0.17	16850.7232	17699.557	19723.699	22727.2645	25992.0096	29256.755
0.19	14571.2656	15304.87	17054.236	19650.0683	22471.6254	25293.182
0.21	12835.885	13481.806	15022.08	17307.6474	19791.9598	22276.272
0.23	11470.3998	12047.36	13423.189	15464.7413	17683.82	19902.899
0.25	10367.844	10889.148	12132.258	13976.8731	15981.8893	17986.905
0.27	9458.88836	9934.3294	11068.073	12750.4029	14579.0221	16407.641
0.29	8696.62035	9133.6155	10175.681	11721.9711	13402.7215	15083.472
0.31	8048.15877	8452.4606	9416.5649	10847.1712	12402.1782	13957.185
0.33	7489.77116	7865.931	8762.9275	10093.9545	11540.723	12987.492
0.35	7003.89779	7355.5784	8194.2014	9438.60967	10791.2274	12143.845
0.37	6577.26669	6907.4595	7694.8422	8863.21664	10133.1888	11403.161
0.39	6199.65977	6510.8393	7252.8829	8353.97987	9550.82437	10747.669
0.41	5863.08202	6157.3188	6858.9604	7900.10595	9031.78591	10163.466
0.43	5561.18787	5840.2316	6505.6435	7493.02894	8566.27398	9639.519
0.45	5288.87663	5554.2192	6186.9593	7125.86384	8146.41229	9166.9607
0.47	5042.00135	5294.9253	5898.0517	6793.01345	7765.79795	8738.5824
0.49	4817.15584	5058.7716	5634.9324	6489.88067	7419.17225	8348.4638
0.51	4611.51626	4842.7918	5394.295	6212.65465	7102.17597	7991.6973

PV ISOTHERM FOR CO₂ GAS



Experiment NO. 07

Aim: → To find the sum, product, division and difference of two numbers.

PROGRAM "TO FIND THE SUM, PRODUCT, DIVISION AND DIFFERENCE OF TWO NUMBERS"

20 REM Input "ENTER THE TWO NUMBERS"; A, B

30 Let C = A + B

40 Let D = A * B.

50 Let E = A / B

60 Let F = A - B

70 Print "THE SUM OF THE TWO NUMBERS"; C

80 PRINT " THE PRODUCT OF THE TWO NUMBERS "; D

90 PRINT " THE DIVISION OF THE TWO NUMBERS "; E

100 PRINT " THE DIFFERENCE OF THE TWO NUMBERS "; F

110 END

PROGRAM 1

10 Rem "TO FIND THE SUM, PRODUCT, DIVISION AND DIFFERENCE OF TWO NUMBERS"

20 Input "ENTER THE TWO NUMBERS"; A, B

30 Let C = A + B

40 Let D = A * B

50 Let E = A / B

60 Let F = A - B

70 Print "THE SUM F THE TWO NUMBERS"; C

80 Print "THE PRODUCT OF THE TWO NUMBERS"; D

90 Print "THE DIVISION OF THE TWO NUMBERS"; E

100 Print "THE DIFFERENCE OF THE TWO NUMBERS"; F

110 End

EXPERIMENT-08

Aim: TO FIND THE AREA OF A CIRCLE.

```
10 Rem "TO FIND THE AREA OF A CIRCLE"  
20 Input "ENTER THE RADIUS"; R  
30 Let A = 3.14 * (R^2)  
40 Print "THE AREA OF THE CIRCLE"; A  
50 End.
```

PROGRAM 2

```
10 Rem "TO FIND THE AREA OF A CIRCLE (A)"  
20 Input "ENTER THE RADIUS"; R  
30 Let A = 3.14 * (R ^ 2)  
40 Print "THE AREA OF THE CIRCLE"; A  
50 End
```



Experiment No - 09

Aim: To find the volume of an ideal gas.

```

10 Rem " TO FIND THE VOLUME OF AN IDEAL GAS" .
20 Input " PRESSURE OF AN IDEAL GAS"; P
30 Input " NUMBER OF MOLES OF THE GAS"; N
40 Let R = 8.314
50 Let T = 300 .
60 Let V = (N * R * T) / P
70 Print " THE VOLUME OF THE IDEAL GAS, V IS"; V
80 End.

```

PROGRAM 3

```

10 Rem "TO FIND THE VOLUME OF AN IDEAL (V)"
20 Input "PRESSURE OF THE IDEAL GAS"; P
30 Input "NUMBER OF MOLES OF THE GAS"; N
40 Let R = 8.314
50 Let T = 300
60 Let V = (N * R * T) / P
70 Print "THE VOLUME OF THE IDEAL GAS, V IS"; V
80 End

```

Experiment No. 10

Aim: To find the pressure of CO_2 gas at 500K using vander waal's gas equation.

10 Rem "TO FIND THE PRESSURE OF CO_2 AT 500 K USING VANDER WAAL'S GAS EQUATION".

20 Let $R = 8.314$

30 Let $T = 500$

40 Input "ENTER THE VANDER WAAL'S CONSTANT'S; A, B"

50 Input "THE VOLUME OF CO_2 "; V

60 Input "ENTER THE NUMBER OF MOLES OF CO_2 "; N

70 Let $P = (N * R * T) / (V - N * B) - (N * A * V^2)$

80 Print "THE PRESSURE OF THE IDEAL GAS IS"; P

90 End

PROGRAM 4

10 Rem "TO FIND THE PRESSURE OF CO_2 GAS AT 500K AS VANDER WAAL'S GAS"; P

20 Input "ENTER THE VANDER WAAL'S CONSTANTS"; A, B

30 Input "ENTER THE NUMBER OF MOLES OF CO_2 "; N

35 Input "ENTER THE VOLUME OF CO_2 "; V

40 Let $T = 500$

50 Let $R = 8.314$

60 Let $P = ((N * R * T) / (V - (N * B))) - ((N * A) / (V^2))$

70 Print "THE PRESSURE OF CO_2 AT 500K IS "; P

80 End

Experiment No - 1

Aim: To find the average velocity, root mean square velocity and most probable velocity of N₂ gas at 300K.

10 Rem "TO FIND THE AVERAGE VELOCITY, ROOT MEAN SQUARE VELOCITY AND MOST PROBABLE VELOCITY OF N₂ GAS AT 300K."

20 Let M = 28

30 Let R = 8.314

40 Let T = 300

50 Let A = $((8 * R * T) / (3.14 * M))^{0.5}$

60 Let B = $((3 * R * T) / M)^{0.5}$

70 Let C = $((2 * R * T) / M)^{0.5}$

80 PRINT "THE AVERAGE VELOCITY OF N₂ AT 300K"; A

90 PRINT "THE RMS VELOCITY OF N₂ AT 300K"; B

100 PRINT "The most probable velocity of N₂ gas -
AT 300K"; C

110 End.

PROGRAM 5

10 Rem "TO FIND THE AVERAGE VELOCITY, ROOT MEAN SQUARE VELOCITY AND MOST PROBABLE VELOCITY OF N₂ GAS AT 300K"

20 Let M = 28

30 Let R = 8.314

40 Let T = 300

50 Let A = $((8 * R * T) / (3.14 * M))^{0.5}$

60 Let B = $((3 * R * T) / M)^{0.5}$

70 Let C = $((2 * R * T) / M)^{0.5}$

80 Print "THE AVERAGE VELOCITY OF N₂ AT 300K IS"; A

90 Print "THE RMS VELOCITY OF N₂ AT 300K IS"; B

100 Print "THE MOST PROBABLE VELOCITY OF N₂ GAS AT 300K IS"; C

110 End

Experiment NO - 13

Aim: To find the sum of first 20 natural numbers

10 Rem "TO FIND THE SUM OF FIRST 20 NATURAL NUMBERS"

20 N=0

30 S=0

40 N=N+1

50 S=S+N

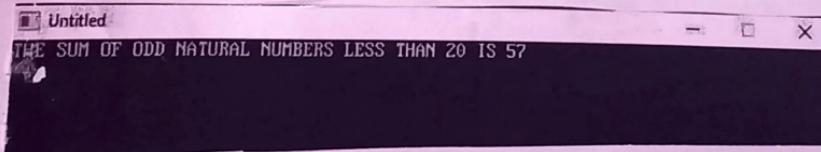
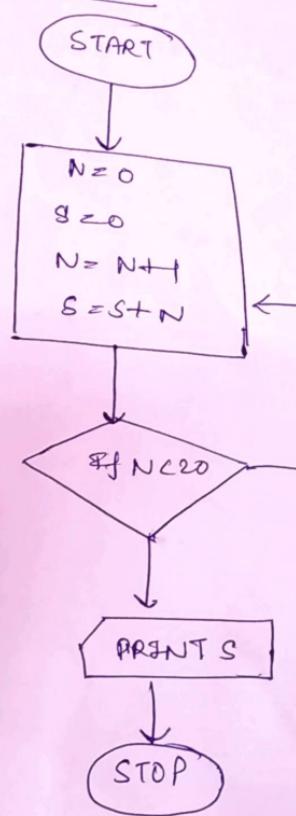
60 If N<20 Then Go To 40

70 Print "THE SUM OF FIRST 20 NATURAL NUMBERS"; S

80 End.



Flowchart



Experiment No - 19

Aim:- To find the sum of odd natural numbers less than 20.

10 Rem "TO FIND THE SUM OF ODD NATURAL NUMBERS LESS THAN 20"

20 N = 1

30 S = 1

40 N = 2 * N + 1

50 S = S + N

60 If N < 20 Then GoTo 40

70 Print "THE SUM OF ODD NATURAL NUMBERS LESS THAN 20"; S

80 End.

PROGRAM 7

10 Rem "TO FIND THE SUM OF ODD NATURAL NUMBERS LESS THAN 20"

20 N = 1

30 S = 1

40 N = N + 2

50 S = S + N

60 If N < 19 Then GoTo 40 Else GoTo 70

70 Print "THE SUM OF ODD NATURAL NUMBERS LESS THAN 20 IS"; S

80 End



Experiment NO-15

Aim: To find the sum of even natural numbers less than 20.

10 Rem "TO FIND THE SUM OF EVEN NATURAL NUMBERS LESS THAN 20"

20 N = 0

30 S = 0

40 N = 2 + N

50 S = S + N

60 If N < 18 Then Goto 40

70 Print "THE SUM OF EVEN NATURAL NUMBERS LESS THAN 20"; S

80 End.

PROGRAM 8

10 Rem "TO FIND THE SUM OF EVEN NATURAL NUMBERS LESS THAN 20"

20 N = 2

30 S = 2

40 N = N + 2

50 S = S + N

60 If N < 18 Then GoTo 40 Else GoTo 70

70 Print "THE SUM OF EVEN NATURAL NUMBERS LESS THAN 20 IS"; S

80 End



Experiment No - 16

Aim: To find the sum of series

```

30 Rem "TO FIND THE SUM OF N"; N
20 Cls
30 Input "ENTER THE VALUE OF N"; N
90 Input "ENTER THE VALUE OF X"; X
50 Let S=0
60 Let I=0
70 Let S=S+(X^I)
80 Let I=I+1
90 If I<=N Then GoTo 70 Else GoTo 100
100 Print "THE SUM OF THE GIVEN SERIES"; S
110 End
    
```

```

Rem "TO FIND THE SUM OF SERIES"
20 Cls
30 Input "ENTER THE VALUE OF N"; N
40 Input "ENTER THE VALUE OF X"; X
50 Let S=0
60 Let I=0
70 Let S=S+(X^I)
80 Let I=I+1
90 If I<=N Then GoTo 70 Else GoTo 100
100 Print "THE SUM OF THE GIVEN SERIES"; S
110 End
    
```



Experiment No-17

Aim: To compare two numbers .

```

10 Rem "TO COMPARE TWO NUMBERS"
20 Cls
30 Input "Enter two numbers"; A, B
40 If A=B Then GoTo 60
50 If A>B Then GoTo 80 Else GoTo 100
60 Print the "THE NUMBERS ARE EQUAL"; A, B
70 GoTo 110
80 Print "A IS GREATER THAN B"; A
90 GoTo 110
100 Print "B IS GREATER THAN A"; B
110 End.

```

PROGRAM 9

```

10 Rem "TO COMPARE TWO NUMBERS"
20 Cls
30 Input "ENTER THE TWO NUMBERS"; A, B
40 If A = B Then GoTo 60
50 If A > B Then GoTo 80 Else GoTo 100
60 Print "THE TWO NUMBERS ARE EQUAL"; A, B
70 GoTo 110
80 Print "A IS GREATER THAN B"; A
90 GoTo 110
100 Print "B IS GREATER THAN A"; B
110 End

```

Experiment NO-18

Page No. _____
Date: _____

Aim: To compare three numbers.

```
10 Rem "TO COMPARE THREE NUMBERS"  
20 Cls  
30 Input "ENTER THREE NUMBERS"; A, B, C  
40 If A > B Then GoTo 50 Else GoTo 60  
50 If A > C Then GoTo 70 Else GoTo 60  
60 If C > B Then GoTo 110 Else GoTo 90  
70 Print "A IS GREATEST NUMBER"; A  
80 GoTo 120  
90 Print "B IS GREATEST NUMBER"; B.  
100 GoTo 120.  
110 Print "C IS GREATEST NUMBER"; C.  
120 End.
```

PROGRAM 10

THREE

```
10 Rem "TO COMPARE TWO NUMBERS"  
20 Cls  
30 Input "ENTER THE THREE NUMBERS"; A, B, C  
40 If A = B Then GoTo 45 Else GoTo 50  
45 If B = C Then GoTo 60  
50 If A > B Then GoTo 55 Else GoTo 59  
55 If A > C Then GoTo 80 Else GoTo 110  
59 If B > C Then GoTo 100 Else GoTo 110  
60 Print "THE THREE NUMBERS ARE EQUAL"; A, B, C  
70 GoTo 120  
80 Print "A IS GREATEST NUMBER"; A  
90 GoTo 120  
100 Print "B IS GREATEST NUMBER"; B  
105 GoTo 120
```



Experiment NO - 20

Page No.	
Date:	

Aim: To find the root of quadratic equations.

```
10 Rem "TO FIND THE ROOTS OF QUADRATIC EQUATIONS"
20 Cls
30 Input "ENTER THE VALUE OF COEFFICIENT OF X^2"; A
40 Input "ENTER THE VALUE OF COEFFICIENT OF X"; B
50 Input "ENTER THE VALUE OF COEFFICIENT OF CONSTANT"; C
60 Let D = (B^2 - (A * A) * C)
70 If D = 0 Goto 80 Else Goto 90
80 Print "THE ROOTS ARE EQUAL"
90 Let R1 = -B / (2 * A)
100 Let R2 = R1
110 Print "THE VALUE OF ROOTS ARE", R1, R2
120 Goto 290
130 If D > 0 Then Goto 140 Else Goto 190
140 Print "THE ROOTS ARE EQUAL AND DISTINCT"
150 Let R1 = (-B + Sqr(D)) / (2 * A)
160 Let R2 = (-B - Sqr(D)) / (2 * A)
170 Print "THE ROOTS ARE", R1, R2
180 Goto 290
190 If D < 0 Then Goto 200
200 Print "THE ROOTS ARE IMAGINARY"
210 Let REAL = Sqr(Abs(D)) / (2 * A)
220 Let IMAG = -B / (2 * A)
230 Print "THE VALUE OF ROOTS", REAL; "+", IMAG
240 Print "THE VALUE OF ROOTS", REAL; "-", IMAG
250 End
```



PROGRAM 11

```
10 Rem "TO FIND THE ROOTS OF A QUADRATIC EQUATION"
20 Cls
30 Input "ENTER THE VALUE OF COEFFICIENT X^2"; A
40 Input "ENTER THE VALUE OF COEFFICIENT X"; B
45 Input "ENTER THE VALUE OF CONSTANT"; C
50 Let D = (B ^ 2) - (4 * A * C)
55 If D = 0 Then GoTo 60 Else GoTo 95
60 Print "THE ROOTS ARE EQUAL"
70 Let R1 = -B / (2 * A)
75 Let R2=R1
80 Print "THE VALUE OF THE ROOTS ARE"; R1, R2
90 GoTo 170
95 If D > 0 Then GoTo 96 Else GoTo 110
96 Print "THE ROOTS ARE REAL AND DISTINCT"
97 Let R1 = ((-B) + Sqr(D)) / (2 * A)
98 Let R2 = ((-B) - Sqr(D)) / (2 * A)
100 Print "THE ROOTS ARE"; R1, R2
105 GoTo 170
110 If D < 0 Then GoTo 120
120 Print "THE ROOTS ARE IMAGINARY"
130 Let REAL = (-B) / (2 * A)
140 Let IMG = (Sqr(Abs(D))) / (2 * A)
150 Print "THE VALUE OF ROOT IS"; REAL; "+i"; IMG
160 Print "THE VALUE OF ROOT IS"; REAL; "-i"; IMG
170 End
```

Experiment NO-21

Aim: "TO calculate product of N natural numbers!"

10 REM "TO CALCULATE PRODUCT OF N NATURAL NUMBER"

20 LET I=1

30 LET P=1

40 LET P=P*I

50 LET I=I+1

60 IF I>N THEN 80

70 GOTO 40

80 Print "PRODUCT="; P

90 End.

10 Rem "TO FIND PRODUCT OF FIRST N NATURAL NUMBERS"

20 Input "ENTER THE VALUE OF N TILL WHICH THE PRODUCT IS TO BE FOUND OUT"; N

30 I=1

40 P=1

50 I=I+1

60 P=P*I

70 If I < N Then GoTo 50 Else GoTo 80

80 Print "THE PRODUCT OF FIRST"; N; "NATURAL NUMBERS IS"; P

90 End



Experiment No.-22

Aim:- To calculate sum and product of N natural nos.

```

10 Rem "To calculate sum and Product of N Natural Nos"
20 Let S=0
30 Let I=0
40 Let P=1
50 Let S=S+I
60 Let P=P*I
70 Let I=I+1
80 If I>N Then Goto 50
90 Print " PRODUCT = "; P
100 Print " SUM = "; S
110 End.
    
```

10 Rem "TO FIND THE SUM AND PRODUCT OF FIRST N NATURAL NUMBERS"

20 Input "ENTER THE VALUE OF N TILL WHICH THE SUM AND PRODUCT IS TO BE FOUND"; N

30 I=1: S=1: P=1

35 I=I+1

40 S=S+I: P=P*I

50 If I< N Then GoTo 35 Else GoTo 60

60 Print "THE SUM AND PRODUCT OF FIRST"; N; "NATURAL NUMBERS IS"; S; "AND"; P;
"RESPECTIVELY"

70 End

Experiment No-23

Page No:	_____
Date:	_____

Aim: To find the sum of first n natural numbers using FOR-NEXT statement in Q-BASIC.

Theory:- To carry out a particular calculation a repeated number of times, FOR-NEXT statement is used. If there is a FOR statement in a program then there must be a NEXT, statement for the same running variable. Unless and until the loop is complete, the compiler will not come to the statement next to the loop. The step size can be positive, negative or zero - There can be more than one FOR-NEXT statement in the same program.

PROGRAM:

```
10 Rem " TO FIND SUM OF N NATURAL NUMBERS "
20 S=0
30 FOR I=1 TO N
40 S=S+I
50 NEXT I
70 PRINT " THE SUM OF FIRST ";N;" NATURAL NUMBERS
           IS ";S
80 End.
```



PROGRAM 14

```
10 Rem "TO FIND SUM OF N NATURAL NUMBERS"  
20 Input "ENTER THE VALUE OF N TILL WHICH THE SUM IS TO BE FOUND"; N
```

```
30 I = 0
```

```
40 S = 0
```

```
50 I = I + 1
```

```
60 S = S + I
```

```
70 If I < N Then GoTo 50 Else GoTo 80
```

OR

```
70 If I >= N Then GoTo 80 Else GoTo 50
```

OR

```
70 If I > (N - 1) Then GoTo 80 Else GoTo 50
```

```
80 Print "THE SUM OF FIRST"; N; "NATURAL NUMBERS IS"; S
```

```
90 End
```

Experiment No-24

Aim: To find the sum of series " $1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots + \frac{x^n}{n!}$ " using Q-BASIC.

TO Rem " TO FIND THE SUM OF SERIES "

20 INPUT " ENTER THE VALUE OF X AND N "; X, N

30 I = 1 : S = 1 : P = 1

90 P = P * I : S = S + ((X^I) / P)

50 I = I + 1

60 If I > N Then Goto 80 Else Goto 90.

70 Print "THE SUM OF THE GIVEN SERIES IS"; S

80 End.

10 Rem "TO FIND THE SUM OF SERIES $1 + (X/1) + ((X^2)/(2*1)) + ((X^3)/(3*2*1)) + \dots + ((X^N)/(N*(N-1)*...*2*1))$ "

20 Input "ENTER THE VALUE OF X AND N"; X, N

30 I = 1 : S = 1 : P = 1

50 P = P * I : S = S + ((X^I) / P)

60 I = I + 1

70 If I > N Then GoTo 80 Else GoTo 50

80 Print "THE SUM OF THE SERIES IS"; S

90 End

Program-25

Aim: To print Fibonacci Series?

Fibonacci numbers are the numbers in which each number number is a sum of previous two numbers. They start with first two numbers 1, 2.

The series goes like 1 2 3 5 8 13 21 ...

```

10 Rem "TO DISPLAY FIBONACCI SERIES UPTO N TERMS"
20 INPUT "ENTER THE VALUE OF N"; N
30 F1=1: F2=2
40 FOR I = 1 TO N
    50 F = F1 + F2
    60 PRINT F
    70 F1=F2: F2=F
80 NEXT I
90 End.

```

10 Rem "TO DISPLAY FIBONACCI SERIES UPTO N TERMS"

20 Input "ENTER THE VALUE OF N"; N

30 F1 = 1: F2 = 2

40 For I = 1 To N

50 F = F1 + F2

60 Print F

70 F1 = F2: F2 = F

80 Next I

90 End

Experiment - 26

Aim: To read and print a matrix A in Q-BASIC.

Theory: READ-DATA statement? If we have to give a no. of entries for performing a particular calculation, then instead of repeatedly giving INPUT statement, we can substitute this by READ-DATA statement.

READ is always used in conjunction with DATA statement. In case there is more DATA than READ, then the extra data will be ignored while if there is insufficient DATA entries corresponding to READ; the program wouldn't run/execute.

```

10 Rem " TO READ AND PRINT A MATRIX A "
20 DIM A(3,3)
30 PRINT " THE MATRIX A IS "
40 FOR I=1 TO 3
    50 FOR J=1 TO 3
        60 READ A(I,J)
        70 PRINT A(I,J);
    80 NEXT J
    90 PRINT
100 NEXT I
110 DATA 24,6,9,12,15,30,45,65
120 End.

```



Experiment No-27

Aim: To read and print a matrix A & C using Q-BASIC) and its transpose A' or T.

```

10 Rem "TO READ AND PRINT A MATRIX AND IT'S TRANSPOSE"
15 INPUT M,N
20 DIM A(3,3); T(3,3)
30 PRINT "THE MATRIX A IS"
40 FOR I = 1 TO M
50 FOR J = 1 TO N
60 READ A(I,J)
70 TO PRINT A(I,J)
80 NEXT J
90 PRINT
100 NEXT I
110 DATA 2,4,6,9,12,15,30,45,60
120 PRINT 2 PRINT,
130 PRINT "TRANSPOSE OF MATRIX A IS T"
140 FOR I = 1 TO N
150 FOR J = 1 TO M
160 · T(I,J) = A(J,I)
170 PRINT T(I,J);
180 NEXT J
190 PRINT
200 NEXT I
210 END

```



PROGRAM 21

```
10 Rem "TO READ AND PRINT A MATRIX AND IT'S TRANPOSE"  
15 Input M, N  
20 Dim A(3, 3), T(3, 3)  
30 Print "THE MATRIX A IS"  
40 For I = 1 To M  
50 For J = 1 To N  
60 Read A(I, J)  
70 Print A(I, J);  
80 Next J  
90 Print  
100 Next I  
110 Data 2,4,6,9,12,15,30,45,60  
120 Print: Print  
130 Print "TRANASPOSE OF MATRIX A IS T"  
140 For I = 1 To N  
150 For J = 1 To M  
160 T(I, J) = A(J, I)  
170 Print T(I, J);  
180 Next J  
190 Print  
200 Next I  
210 End
```

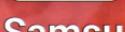
Experiment-28

Aim: To write a program to read and print the resultant matrix as sum of two different matrices in QBASIC.

```

10 REM " TO READ AND PRINT A MATRIX A "
15 INPUT M,N
20 DIM A(3,3), B(3,3), C(3,3)
30 PRINT " THE MATRIX A IS "
40 FOR I = 1 TO M
    50 FOR J = 1 TO N
        60 READ A(I,J)
        70 PRINT A(I,J);
    80 NEXT J
    90 PRINT
100 NEXT I
110 DATA 3,-1,0,4,7,2,5,0,5
120 PRINT : PRINT
130 REM " TO READ AND PRINT A MATRIX B "
140 PRINT " THE MATRIX B IS "
150 FOR I = 1 TO M
    160 FOR J = 1 TO N
        170 READ B(I,J);
        180 PRINT B(I,J);
    190 NEXT J
    200 PRINT
210 NEXT I,

```



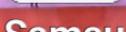
Experiment - 29

Aim:- Write a program in QBASIC to read and print a matrix C as the difference of two matrices A and B.

```

10 REM " TO READ AND PRINT A MATRIX A"
15 INPUT M,N
20 DIM A(3,3) , B(3,3) > C(3,3)
30 PRINT " THE MATRIX A IS"
40 FOR I=1 TO M
50 FOR J=1 TO N
60 READ A(I,J)
70 PRINT A(I,J);
80 NEXT J
90 PRINT
100 NEXT I
110 DATA -3,-1,0,4,7,2,5,0,5
120 PRINT : PRINT
130 REM " TO READ AND PRINT A MATRIX B"
140 PRINT " THE MATRIX B IS"
150 FOR I=1 TO M
160 FOR J=1 TO N
170 READ B(I,J)
180 PRINT B(I,J);
190 NEXT J
200 PRINT
210 NEXT I
220 PRINT

```



PROGRAM 23

```
10 Rem "TO READ AND PRINT A MATRIX A"
15 Input M, N
20 Dim A(3, 3), B(3, 3), C(3, 3)
30 Print "THE MATRIX A IS"
40 For I = 1 To M
    50 For J = 1 To N
        60 Read A(I, J)
        70 Print A(I, J);
    80 Next J
    90 Print
100 Next I
110 Data 3,-1,0,4,7,2,5,0,5
120 Print: Print
130 Rem "TO READ AND PRINT A MATRIX B"
150 Print "THE MATRIX B IS"
160 For I = 1 To M
    170 For J = 1 To N
        180 Read B(I, J)
        190 Print B(I, J);
    200 Next J
    210 Print
220 Next I
230 Data 9,1,-1,7,2,8,1,20,15
240 Print: Print
250 Print "THE RESULTANT MATRIX C IS"
260 For I = 1 To M
    270 For J = 1 To N
        280 C(I, J) = A(I, J) - B(I, J)
        290 Print C(I, J);
    300 Next J
    310 Print
320 Next I
```

16/1/2024

Page No.

Date

Experiment NO - 30

Aim: "To find the Line of Best Fit"

Problem "TO FIND THE LINE OF BEST FIT"

20 LET

30 PRINT "THE LINE OF BEST FIT"

40 DIM X(12), Y(12)

50 LET N=5

60 I=1 TO N

70 READ X(I), Y(I)

80 LET SX = SX + X(I)

90 LET SY = SY + Y(I)

100 LET SXX = SXX + (X(I))^2

110 LET SYY = SYY + (Y(I))^2

120 LET SX_Y = SX_Y + (X(I))*(Y(I))

130 Next I

140 LET D = N * SX_X - (SX)^2

150 LET M = (N * SX_Y - SX * SY) / D

160 LET C = (SX_X * SY - SX * SX_Y) / D

170 PRINT "THE SLOPE OF LINE JM"; M

180 PRINT "THE INTERCEPT (C)"; C

190 LET UX = (SX_X / N) - (SX / N)^2

200 LET UY = (SY_Y / N) - (SY / N)^2

210 PRINT "THE VARIANCE OF X, UX"; UX

220 PRINT "THE VARIANCE OF Y, UY"; UY

230 LET SDX = SQR(UX)

240 LET SDY = SQR(UY)



Experiment NO-31

Aim: To find the roots of Quadratic Equation using Newton Raphson Method.

10 Rem "To find the roots of Quadratic Equation Using Newton Raphson Method"

20 ds

30 Input " ENTER THE COEFFICIENT OF x^2 "; A

40 Input " ENTER THE COEFFICIENT OF x^1 ; B

50 Input " ENTER THE VALUE OF CONSTANT"; C

60 DEF FNA(x) = A*x^2 + B*x + C

70 DEF FND(x) = 2*A*x + B

80 Input "ENTER THE GUESS VALUE"; X0

90 Input "ENTER THE VALUE OF N"; N

100 FOR I=1 TO N step 1

110 $x = x_0 - (FNA(x_0) / FND(x_0))$

120 If $|x - x_0| < 0.0001$ Then (50 Else Goto 130

130 Let $x_0 = x$

140 'Next I .

150 Print "THE VALUE OF GUESS VALUE"; X0

160 Print "THE VALUE OF I IS"; I

170 End.



PROGRAM 28

10 Rem "TO FIND THE ROOTS OF QUADRATIC EQUATION USING NEWTON RAPHSON METHOD"

20 Cls

30 Input "ENTER THE COEFFICIENT OF X^2"; A

40 Input "ENTER THE COEFFICIENT OF X"; B

50 Input "ENTER THE VALUE OF CONSTANT"; C

60 DEF FNA(X) = A * X ^ 2 + B * X + C

70 DEF FND(X)= 2*A*X+B

80 Input "ENTER THE GUESS VALUE"; Xo

90 Input "ENTER THE VALUE OF N"; N

100 For I = 1 To N Step 1

110 X = Xo - (FNA(Xo) / FND(Xo))

120 If Abs(X - Xo) < 0.0001 Then 150 Else GoTo 130

130 Let Xo = X

140 Next I

150 Print "THE VALUE OF GUESS VALUE"; Xo

160 Print "THE VALUE OF I IS"; I

170 End



samsung Quad Camera
shot with my Galaxy A22

Program No. 32

Aim: To write a program in Q-BASIC to find out the area under the curve for a polynomial using TRAPEZOIDAL RULE"

PROGRAM:-

```

10 Rem "WAP TO FIND OUT THE AREA UNDER THE CURVE FOR
      A POLYNOMIAL USING TRAPEZOIDAL RULE"
20 CLS
30 INPUT "ENTER THE NUMBER OF DIVISION N="; N
40 INPUT "ENTER THE LOWER LIMIT A="; A
50 INPUT "ENTER THE UPPER LIMIT B="; B
60 DEF F(N)=X^2+6*X+9
70 H= (B-A)/N
80 S=0
90 FOR I=1 TO N-1
100 S=S+F(N*(A+I*H))
110 NEXT I
120 A= ABS(H*0.5*(F(N)*(A)+F(N)*(B)+2*(S)))
130 PRINT "AREA UNDER THE CURVE OF GIVEN
          POLYNOMIAL A="; A
140 END
    
```

10 Rem " WAP TO FIND OUT THE ENTHALPY OF NITROGEN GAS USING TRAPEZODAL RULE "

20 Cls

30 Input " ENTER THE NUMBER OF DIVISION N= "; N

40 T1 = 298

50 T2 = 373

60 DEF FNY(T) = 31.44 - 0.01 * T + (0.000036) / (T ^ 2)

70 H = (T2 - T1) / N

80 S = 0

90 For I = 1 To N - 1

100 S = S + FNY(T1 + I * H)

110 Next I

120 E = Abs(0.5 * H * (FNY(T1) + FNY(T2) + H * S))

130 Print " ENTHALPY OF NITROGEN GAS E= "; E; " JMOL^-1"

140 End

PROGRAM 38 : DATE : 23-04-2024

130 Print AREA

Untitled

THE VALUES OF N AND R IS : ? 10,5
THE NCR OF 10 AND 5 IS : 252

Program - 34

Aim:- To write a program in Q-BASIC to find the area under the curve using SIMPSON ONE THIRD RULE"

Program

10 Rem "To find the area under the curve using SIMPSON ONE THIRD RULE "

```

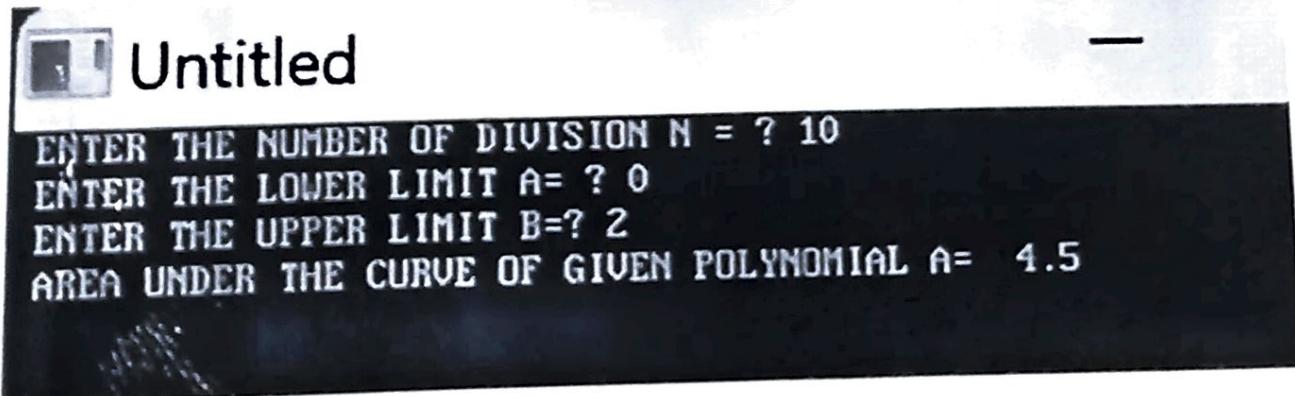
20 CLS
30 INPUT " LOWER LIMIT "; A
40 INPUT " UPPER LIMIT "; B
50 INPUT " NUMBER OF INTERVALS "; N
60 FNY(X) = X^2 + 6 * X + 9
70 H = (B - A) / N
80 SUM = FNY(A) + FNY(B)
90 S = 0
100 M = H
110 FOR I = 1 TO N - 1
120 S = S + FNY(A + I * H) * M
130 IF M = H THEN M = 2 ELSE M = 1
140 NEXT I

```

PTO

```
10 Rem "WAP TO FIND OUT THE AREA UNDER THE CURVE FOR A POLYNOMIAL USING TRAPEZODAL RULE"
20 Cls
30 Input " ENTER THE NUMBER OF DIVISION N = "; N
40 Input " ENTER THE LOWER LIMIT A= "; A
50 Input " ENTER THE UPPER LIMIT B="; B
60 FNY(X) = X ^ 2 + 6 * X + 9
70 H = (B - A) / N
80 S = 0
90 For I = 1 To N - 1
    100 S = S + FNY(A + I * H)
110 Next I
120 A = Abs(H * 0.5 * (FNY(A) + FNY(B) + 2 * (S)))
130 Print " AREA UNDER THE CURVE OF GIVEN POLYNOMIAL A= "; A
140 End
```

OUTPUT :



PROGRAM **35**: DATE : 23-04-2024

10 Rem " SUBROUTINE PROGRAM "

20 Input " THW VALUES OF N AND R IS : "; N, R

30 A = N

40 GoSub 500

50 NFAC = P

60 A = R

70 GoSub 500

80 RFAC = P

90 A = (N - R)

100 GoSub 500

110 NRFAC = P

120 NCR = (NFAC) / ((RFAC * NRFAC))

130 Print "THE NCR OF "; N; "AND"; R; "IS :"; NCR

140 End

500 Rem SUBROUTINE

510 P = 1

520 For I = 1 To A

530 P = P * I

540 Next I

560 Return

OUTPUT :

```
Untitled
THW VALUES OF N AND R IS : ? 10,5
THE NCR OF 10 AND 5 IS : 252
```