Kantipur City College

Department of Computer Engineering

Semester IV/ Probability and Statistics

Lab Sheet No.1

Title:Computing Measures of Central Tendencyusing EXCEL.

Objectives: To find arithmetic mean, median, mode and partition values for

i) Individual series

ii) Discrete series

iii) Continuous series

Theory:

Name	Formula		
	Individual series	Discrete series	Continuous series
Mean	$\bar{X}=\frac{\sum X}{n}$	$\bar{X}=\frac{\sum fX}{N}$	$\bar{X}=\frac{\sum fX}{N}$ Where x= mid value of class interval $=\frac{lower\ limt+upper\ limit}{2}$
Median	M_d=Value of $\frac{(n+1)^{th}}{2}$ item	M_d =Value of $\frac{(N+1)^{th}}{2}$ item	M_d=l+$\frac{h}{f}(\frac{N}{2}$ cf)
Mode	The most frequent number	The most frequent number	M_o =l+$h \times \frac{(f1-f0)}{(2f1-f0-f2)}$
Quartiles	Q_i =Value of $\frac{i(n+1)^{th}}{4}$ item i=1,2,3	Q_i =Value of $\frac{i(N+1)^{th}}{4}$ item	Q_i =l+$\frac{h}{f}(\frac{iN}{4}$ cf)
Deciles	D_i =Value of $\frac{i(n+1)^{th}}{10}$ item i=1,2,3,4,5,6,7,8,9	D_i =Value of $\frac{i(N+1)^{th}}{10}$ item	D_i =l+$\frac{h}{f}(\frac{iN}{10}$ cf)
Percentiles	P_i =Value of $\frac{i(n+1)^{th}}{100}$ item i=1,2,3……99.	P_i =Value of $\frac{i(N+1)^{th}}{100}$ item	P_i =l+$\frac{h}{f}(\frac{iN}{100}$ cf)

Lab Work:

1) Following are the marks obtained by 13 students in Probability and Statistics.

24	27	36	48	52	52	54	55	59	60	85	90	95

Obtain mean, median, mode, first quartile, second quartile, 6thdecile, 5th percentile, 47th percentile.

Excel Formula:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
10	Following are the marks obtained 13 students in probability and statistics.													
11	24	27	36	48	52	52	54	55	59	60	85	90	95	
12														
13														
14														
15														

	Marks(X)		Measures	Value	Formula
17	24		AM	56.7	=AVERAGE(A17:A29)
18	27		Md	54	=MEDIAN(A17:A29)
19	36		Mo	52	=MODE(A17:A29)
20	48		Q1	48	=QUARTILE(A17:A29,1)
21	52		Q2	54	=QUARTILE(A17:A29,2)
22	52		D6	55.8	=PERCENTILE(A17:A29,0.6)
23	54		Pos	25.8	=PERCENTILE(A17:A29,0.05)
24	55		P47	53.28	=PERCENTILE(A17:A29,0.47)
25	59				
26	60				
27	85				
28	90				
29	95				
30					

2.

Claims(x)	1	2	3	4	5	6	7	8	9	10
Frequency(f)	2	3	4	5	7	10	5	2	2	1
cf	2	5	9	14	21	31	36	38	40	41

Excel Formula:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Claims(x)	1	2	3	4	5	6	7	8	9	10			
2	Frequency(f)	2	3	4	5	7	10	5	2	2	1			
3	cf	2	5	9	14	21	31	36	38	40	41			
4														
5														
6														

	Measures	position	Formula	Value	Formula			
8	AM			5.219512	=SUMPRODUCT(B1:K1,B2:K2)/K3			
9	Mo	10	=MAX(B2:K2)	6	=G1			
10	Q1	10.5	=B120.25*(K3+1)	14	=E3			
11	Q2	21	=0.5*(K3+1)	5	=F1			
12	Q3	31.5	=0.75*(K3+1)	7	=H1			
13	D5	21	=0.5*(K3+1)	5	=F1			
14	P26	10.92	=0.26*(K3+1)	4	=E1			
15	P40	16.8	=0.4*(K3+1)	5	=F1			
16								
17								
18								

3) Following data indicates the number of vehicles arrived during past 100 days in a certain tolling station.

Vehicles	0-10	10-20	20-30	30-40	40-50

No. of days	3	14	53	20	10

Calculate mean, median, mode, first quartile, second quartile, 5thdecile, 26th percentile, 40th percentile.

Excel Formula:

	A	B	C	D	E	F	G	H	I	J
1	Class	f	LCB	UCB	x	h	cf	cell	formula	
2	0-10	3	0	10	5	10	3	E2	=(D2+C2)/2	
3	10 - 20	14	10	20	15	10	17	F3	=D2-C2	
4	20-30	53	20	30	25	10	70	G3	=G2+B3	
5	30-40	20	30	40	35	10	90			
6	40-50	10	40	50	45	10	100			
7										
8										
9	Measures	Position	Formula	Class	Value	Formula				
10	AM				27	=SUMPRODUCT(B2:B6,E2:E6)/G6				
11	Mo	53		20-30	25.41667	=C4+F4*(B4-B3)/(2*B4-B3-B5)				
12	Md	50	=0.5*G6	20-30	26.22642	=C4+F4*(B12-G3)/B4				
13	Q1	25	=0.25*G6	20-30	21.50943	=C4+F4*(B13-G3)/B4				
14	Q2	50	=0.5*G6	20-30	26.22642	=C4+F4*(B14-G3)/B4				
15	D5									
16	P26									
17	P40									
18										

Assignments:

Calculate mean, median, mode, first quartile, second quartile, 6thdecile, 26th percentile, 75th percentile for the followings.

1) The marks obtained by 10 students in Statistics.

75	79	80	81	84	85	88	90	92	95

2.

Marks	10	20	30	40	50	60	70	80	90
No.of students	2	4	6	10	7	5	3	2	1

3.

Marks	0-20	20-40	40-60	60-80	80-100
No. of students	10	22	35	28	5