FEISAL HASHAM 660473

1)a)

Descriptive Uses data already available to understand past and present Data visualisation such as in ameeting to see past trends in buying of a product
Predictive Uses past data to foresee what will occur Businesses can use to see what they should stock more as it sells more
Prescriptive Uses optimization techniques to see what should occur Machine Learning such as AI to predict what action is needed and to do so automatic

1)b)i)

(score-mean)/sd			
(Z score of(score-mean)/sd)			
0.375			
0.6461			
0.3539	26.5425		26

1)b)ii)

(score-mean)/sd			
(Z score of(score-mean)/sd)			
1.625	-0.625		
0.9479	0.2659		
	0.682	51.15	51

2)a)

Z score is (score-mean)/sd
2.333333333

2)b)i)

Cost	Number	F	x	fx	fxx
30 – 39	28	28	34.5	966	33327
40 – 49	26	54	44.5	1157	51486.5
50 – 59	27	81	54.5	1471.5	80196.75
60 – 69	51	132	64.5	3289.5	212172.8
70 – 79	25	157	74.5	1862.5	138756.3
80 – 89	17	174	84.5	1436.5	121384.3
90- 99	30	204	94.5	2835	267907.5
				13018	

Mean	
sigma fx	13018
sigma f	204
Mean	63.81373

Median	102
Median class	60-69
Lm	59.5
n	204
F	81
fm	51
i	10

Median	63.61765

Mode	
Lmo	59.5
Tr1	26
Tr2	24
i	10
Mode	64.7

2)b)ii)

Q3	153
Q3 class	70-79
Lq3	69.5
3/4n	153
F	132
fq3	25
i	10
Q3	77.9

Q1	51
Q1 class	30-39
Lq1	29.5
1/4n	51
F	0
fq1	28
i	10
Q1	47.71429

IQR	
Q3	77.9
Q1	47.71429
IQR	30.18571

Variance	
sigma fxx	905231
(sigma fx)^2	1.69E+08
n	204
Variance	365.2153

Std Dev	
variance	365.2153
std dev	19.11061

3)a)i)

x	1	0	2	7	4	3	3
y	95	90	90	55	70	80	85
xy	95	0	180	385	280	240	255
xx	1	0	4	49	16	9	9
yy	9025	8100	8100	3025	4900	6400	7225

R	
n	7
sigma xy	1435
sigma x	20
sigma y	565
n sigma xx	616
(sigma x)^2	400
n sigma yy	327425
(sigma y)^2	319225
R	-0.943

num	-1255
den	1771200
sqrt den	1330.864

Since the correlation coefficent is -0.943 there is a strong negative relationship such that when there is a decrese in y there is an increase in x

3)a)ii)

b		num	-179.286	a	
sigma xy	1435	den	30.85714	Y bar	80.71429
sigma x	20	b	-5.81019	b	-5.81019
sigma y	565			X bar	2.857143
sigma xx	88			a	97.31481
(sigma x)^2	400				
k	7				

Y=97.3-5.81x

5 absence 68.25

3)b)

OBSERVED	choc	chip	smooth	total
male	30	28	12	70
female	41	18	37	96
total	71	46	49	166

df	(R-1)(C-1)
df	2
sign	0.1
critical va	4.605

EXPECTED	choc	chip	smooth	total
male	29.93976	19.39759	20.66265	70
female	41.06024	26.60241	28.33735	96
total	71	46	49	166

((O-E)^2)/E	choc	chip	smooth	total	
male	0.000121	3.814982	3.631747	7.44685	
female	8.84E-05	2.781757	2.648149	5.429995	
total	0.00021	6.596739	6.279896	12.87684	chi square value

We hence reject the null hypothesis since the chi-square value is greater than the critical value