Sec: BCS-4F Name: Shahzaib Khan

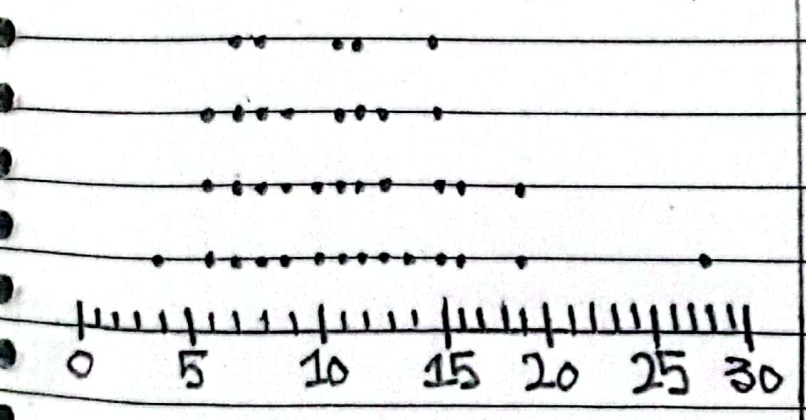
Prob. Assg#=1 Roll No: 19k-0273 Date:

(Q.1)

Part 'a')

x	f
4	1
6	3
7	4
8	4
9	3
10	2
11	4
12	4
13	3
14	1
15	4
16	2
19	2
28	1

Dot-Plot:



Part 'b') Stem & Leaf Plot:

S	L
0	4,6,6,6,7,7,7,7,8,8,8,9,9,9
1	0,0,1,1,1,1,2,2,2,2,3,3,3,4,5,5,5,5,
2	6,6,9,9
2	8

Q.2)

Part 'a') $n = 36$

$Q_1 = \left(\frac{n+1}{4}\right)^{th} = \frac{37}{4}^{th} = 9.25^{th} = 9^{th} + 0.25(10^{th} - 9^{th})$

$\Rightarrow Q_1 = 48 + 0.25(48 - 48)$

$\Rightarrow \boxed{Q_1 = 48}$

$Q_2 = \left(\frac{n+1}{2}\right)^{th} = \frac{37}{2}^{th} = 18.5^{th} = 18^{th} + 0.5(19^{th} - 18^{th})$

$\Rightarrow Q_2 = 59 + 0.5(60 - 59)$

$\Rightarrow \boxed{Q_2 = 59.5}$

$Q_3 = 3\left(\frac{n+1}{4}\right)^{th} = \frac{3(37)}{4}^{th} = 27.75^{th} = 27^{th} + 0.75(28^{th} - 27^{th})$

$\Rightarrow Q_3 = 68 + 0.75(69 - 68)$

$\Rightarrow \boxed{Q_3 = 68.75}$

Part 'b') $I.Q.R = Q_3 - Q_1$

$= 68.75 - 48$

$\Rightarrow \boxed{I.Q.R = 20.75}$

Part 'c') Five Number Summary:

$min = 31, Q_1 = 48, Q_2 = median = 59.5, Q_3 = 68.75, max = 79$

Part 'd') Lower Limit $= Q_1 - 1.5 \times I.Q.R$

$= 48 - 1.5(20.75)$

$\Rightarrow \boxed{Lower\ Limit = 16.875}$

Upper Limit $= Q_3 + 1.5 \times I.Q.R$

$= 68.75 + 1.5(20.75)$

$\Rightarrow \boxed{Upper\ Limit = 99.875}$

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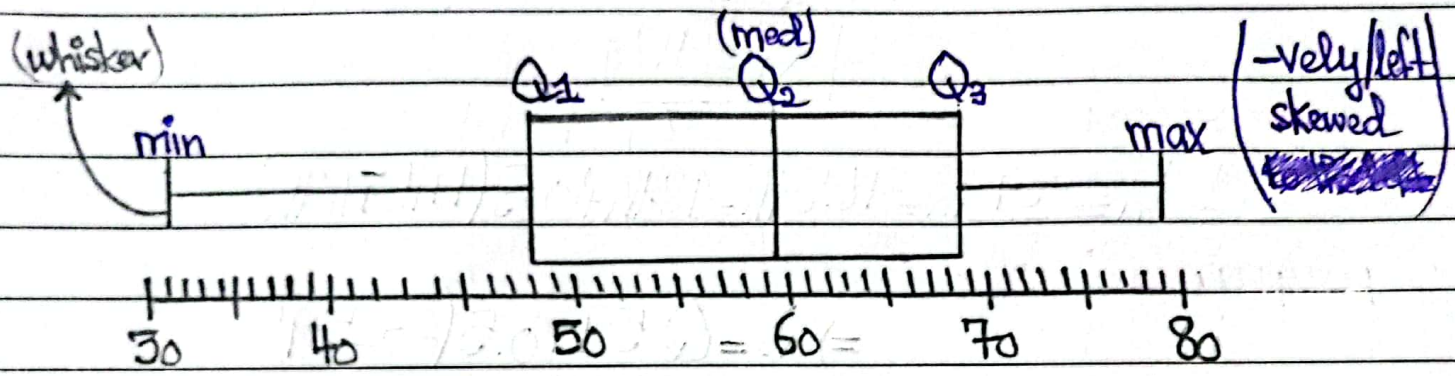
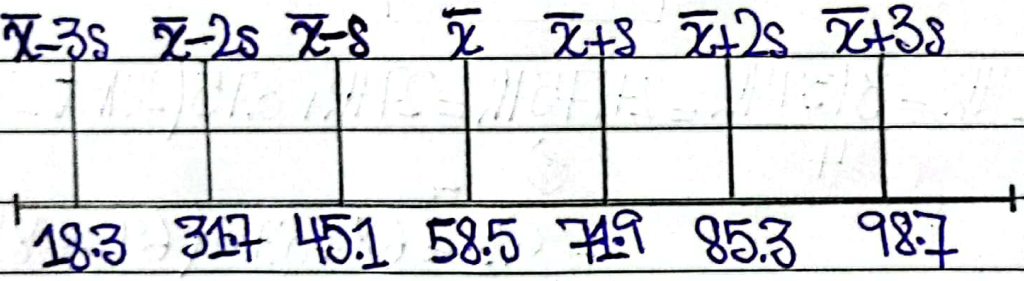
Part 'e') No Outlier are present in the data since no value is smaller than lower-limit (i.e. 16.875) & greater than upper-limit (i.e. 99.875)

Part 'f') Box-Plots



(Q.3)



Given:

i, $\bar{x} = 58.5$

ii, $s = 13.4$

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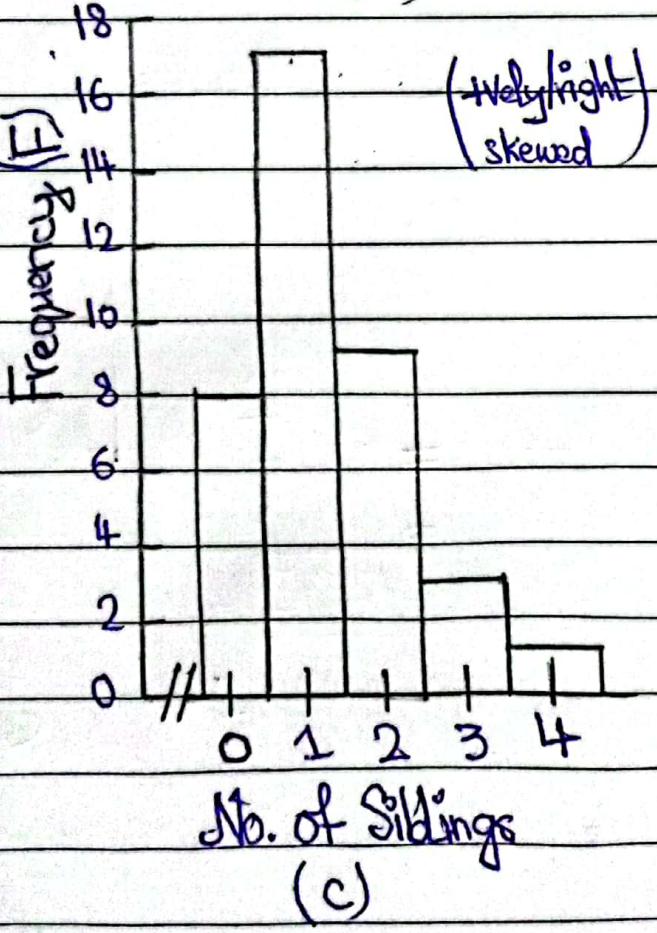
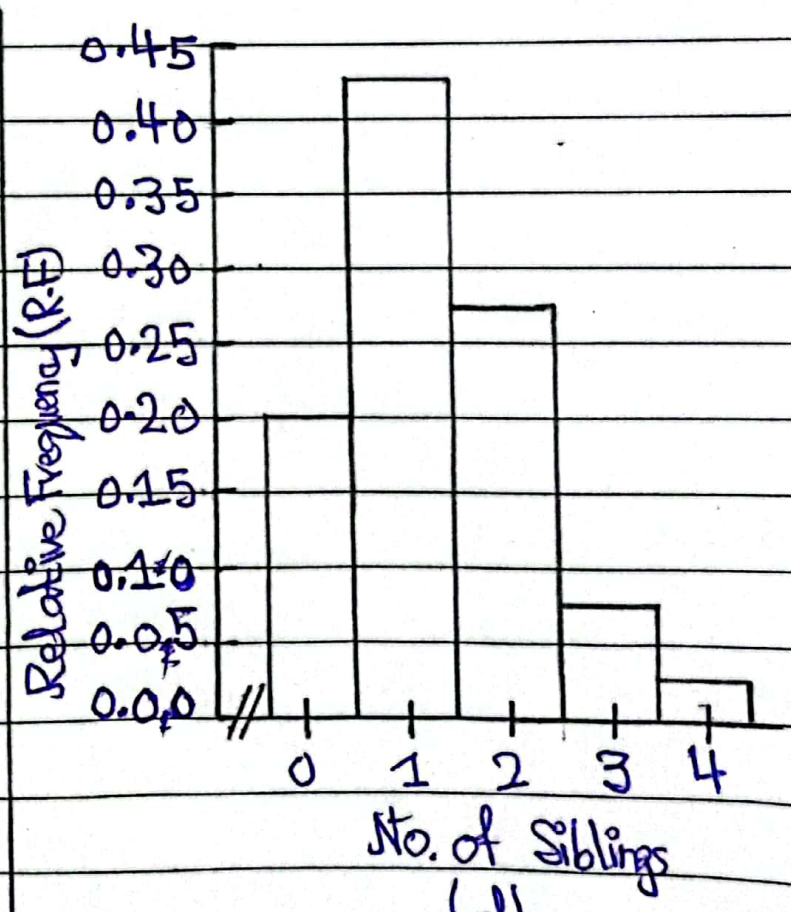
Q.4)

Part i.: Number of Siblings (single-point grouping)

No. of Siblings	Frequency (F) → a.	Relative Frequency (R.F) → b.
0	8	8/40 = 0.2
1	17	17/40 = 0.425
2	11	11/40 = 0.275
3	3	3/40 = 0.075
4	1	1/40 = 0.025

$\Sigma F = 40$ (Total)





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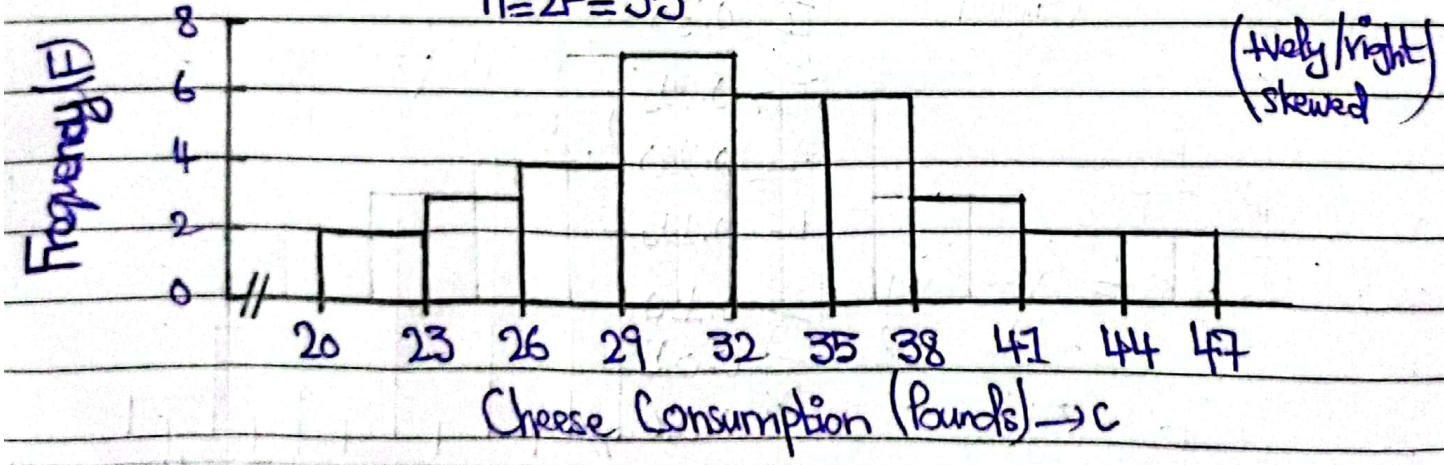
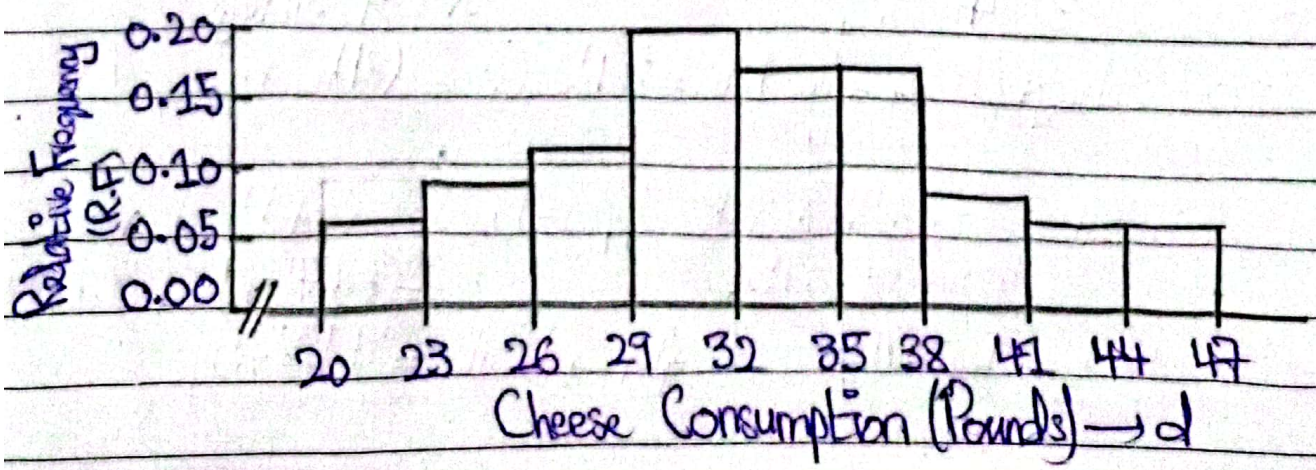
Part ii.a Cheese Consumption (Limit Grouping)

Cheese Consumption (Pounds)	Frequency (F) → a	Relative Frequency (R.F) → b
20-22	2	2/35=0.057
23-25	3	3/35=0.086
26-28	4	4/35=0.114
29-31	7	7/35=0.20
32-34	6	6/35=0.171
35-37	6	6/35=0.171
38-40	3	3/35=0.086
41-43	2	2/35=0.057
44-46	2	2/35=0.057

$n = \Sigma F = 35$





Part iii: Fuel Tank Capacity (Cutpoint Grouping)

Fuel Tank Capacity (Gallons)	Frequency (F) → a	Relative Frequency (R.F) → b
12-under 14	2	2/35 = 0.057
14-under 16	6	6/35 = 0.171
16-under 18	7	7/35 = 0.20
18-under 20	6	6/35 = 0.171
20-under 22	6	6/35 = 0.171
22-under 24	3	3/35 = 0.086
24-under 26	3	3/35 = 0.086
26-under 28	2	2/35 = 0.057

$n = \Sigma F = 35$