Assignment on T-Test

Q.1. mean = 72/min

$s = 6.5$

25 sample of avg. 69 = $\bar{x} = 69$, $n = 25$

at 95% CI

$$\bar{x} \pm t_{0.05/2} \times \frac{s}{\sqrt{n}}$$

$$= 69 \pm 2.11 \times \frac{6.5}{\sqrt{25}}$$

$$= 69 \pm 2.743$$

66.257, 71.743

Q.2 $n = 30$ = $df = 30-1 = 29$ for .05 = 2.045

$\bar{x} = 17$

$s = 5.5$

$H_0 = 15$

$H_1 \neq 15$

$$t = \frac{17-15}{s\sqrt{30}} = \frac{2}{1} = 2$$

for two tail = critical value = 2.045

and value of t is 2 where $2.045 > 2$

So we will accept the null hypothesis.

Q.3

Control	Relation
$\bar{X}_1 = 30$	$\bar{X}_2 = 26$
$S_1 = 6.63$	$S_2 = 6.20$
$n_1 = 15$	$n_2 = 16$

$df = n_1 + n_2 - 2$

$= 15 + 16 - 2 = 29$

$= 2.045$

for independent

$$t = \frac{30 - 26}{\sqrt{\frac{(6.63)^2}{15} + \frac{(6.20)^2}{16}}} = \frac{4}{\sqrt{2.93 + 2.40}}$$

$$= \frac{4}{2.3092} = 1.732$$

Critical value is 2.045 and value of $t = 1.732$

Q.4

Control. run. C-R Total no. = 60 mean $= \frac{60}{15} = 4$

38	35	9
40	32	64
35	30	25
36	34	4
35	30	25
32	32	0
31	28	9
30	27	9
28	22	36
26	22	16
24	18	36
21	17	16
18	17	1
34	25	81
22	21	1
	60	332

Stand. Dev = 2.56

$S.E = \frac{2.56}{\sqrt{15}} = .6614$

$t = \frac{4}{.6614} = 6.060$

$df = 15 - 1 = 14$ has. 2.145

(2)

Q5.

Null $H_0 = 16$

Alt. $H_1 \neq 16$

(3)

no. of month = 10 $df = n-1 = 10-1 = 9$, $\bar{X} = 18$, $S = 2.05$

$$t = \frac{\bar{X} - \mu_0}{S/\sqrt{n}} = \frac{18-16}{2.05/\sqrt{10}} = \frac{2}{.6482} = \underline{3.085}$$

we will reject the null hypothesis.