WB

unit2

Ans 50)

X_1 : sample denoting the height of sailors

X_2 : " " " " soldiers

Null Hypothesis : $H_0: \mu_1 = \mu_2$

There is no difference b/w mean of two populations.

Alternative Hypothesis : $H_1: \mu_1 > \mu_2$ (one tailed test)

Calculation of mean

Formula : $$t = \frac{\bar{x_1} - \bar{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

case 1 (1) $$S^2 = \frac{n_1 s_1^2 + n_2 s_2^2}{n_1 + n_2 - 2}$$

s_1 = SD of sample 1

s_2 = " " " 2

case 2 if s_1, s_2 are not given

then $$s^2 = \frac{\Sigma(x_1 - \bar{x}_1)^2 + \Sigma(x_2 - \bar{x}_2)^2}{n_1 + n_2 - 2}$$

Calculation of 2 sample means

X_1	$X_1 - \bar{X_1}$	$(X_1 - \bar{X_1})^2$
63	-5	$(63-68)^2 = 25$
65	-3	9
68	0	0
69	1	1
71	3	9
72	4	16
$\Sigma X_1 = 408$		$\Sigma(x - \bar{x})^2 = 60$

$\bar{X_1} = \frac{408}{6} = 68$

For X_2

X_2	$X_2-\bar{X_2}$	$(X_2-\bar{X_2})^2$
61	-6.66	44.36
62	-5.66	32.035
65	-2.66	7.0756
66	1.66	2.7556
69	1.34	1.7956
70	2.34	5.4756
71	3.34	11.1556
72	4.34	18.8356
73	5.34	28.5156
		152.0002

$\Sigma X_2 = 67.66$

$n = 9$

$$S^2 = \frac{\Sigma (X_1-\bar{X_1})^2 + \Sigma (X_2-\bar{X_2})^2}{n_1+n_2-2}$$

$$\boxed{S = 4.1038}$$

Test statistic $\quad t = \dfrac{\bar{X_1} - \bar{X_2}}{S\sqrt{\frac{1}{n_1}+\frac{1}{n_2}}}$

$$= \frac{68 - 67.66}{4.1038\sqrt{\frac{1}{6}+\frac{1}{9}}}$$

$$= 0.1567$$

$t_{(5\%.\text{LOS}\ ,\ df=13)} = 1.77$

conclusion $\quad t_{tab} > t_{cal} \Rightarrow$ Ho is accepted

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Q33 Define critical Region?

Ans) It is also known as rejection region. it is a set of values for the test statistic for which the null Hypothesis is rejected & accepted the alternative Hypotheses.

Ans Q34 Hypothesis ~~testing~~

it is an concept or idea ~~or~~ ~~state~~ or claim that you test through research and experiments. or it is a prediction that is can be tested by research.

Tybes:

Null Hypothesis: Symbol (Ho)

it is a assumption that says there is no statistical significance b/w the two variable.

~~or~~

Alternative Hypothesis or Research Hypothesis (Hi)

it states there is a statistically significant relationship b/w two variables.

Ans 35 control limits for C-chart

1) central line = $\bar{c}$

where $\bar{c}$ = Number of defects in all sample / Total number of sample

2) UCL: upper control limit = $\bar{c} + 3\times\sqrt{\bar{c}}$

3) LCL: lower " " = $\bar{c} - 3\times\sqrt{\bar{c}}$

C-chart is attributes charts for SQC

Ans36 SQC : statistical Quality control these are statistical techniques that are used to control, improve & maintain Quality or to solve quality problem.

Techniques for SQC

- process control
  - By using control charts
    - control charts for variables
      1) $\bar{X}$ charts or mean chart
      2) R-charts or Range chart
    - control charts for attributes
      1) p-chart
      2) np-chart
      3) c-chart
- product control

degree of freedom

unit-2

Single sample t-test

$df = n - 1$

n = no. of items in a sample

t-test with two samples

$df = (n_1 + n_2) - 2$

no. of item in sample 1 = n_1

no. of items in sample 2 = n_2

chi-square test

(I) $df = (c-1)(r-1)$

c = no. of colums

r = " " row

↓

Test of independance

(II) Goodness of fit test

Binomal $D = n-1$

Pouson $D = n-2$

ANOVA (one way)

df for SSC = $c-1$

df " SSE = $n-c$

c = no. of colums

n = Total items

degree of freedom for ANOVA - 2 way

df for SSC = $C-1$

" " SSR = $R-1$

df for error or SSE

$= (N-1) - \{(C-1)+R-1\}$

R = no. of Rows

C = " " "