

# QMS 202 TEST2 CRIB SHEET (W2017) - FRONT

## Critical value summary

### Critical values (z or dist-norm-InvN):

- 2-tail test: ( $H_a: \neq$ )-----> tail: central, area: confidence interval
- Left tail i.e. ( $H_a: u < \#\#$ )---> tail: left, area:  $\alpha$
- Right tail test ( $H_a: u > \#\#$ ) ----> tail: right, area:  $\alpha$

### Critical values (t or dist-t-InvT):

- Left tail i.e. ( $H_a: u < \#\#$ )---> area: you confidence (ex:  $1-\alpha$ )
- Right tail test ( $H_a: u > \#\#$ ) ----> area:  $\alpha$
- 2-tail test: ( $H_a: \neq$ )-----> area:  $\alpha / 2$

### Critical values for F-test (Dist -F -InvF)

- If two-tailed test (i.e.  $H_a$  has a  $\neq$ ):

#### **1<sup>st</sup> critical value "F Upper "**

area:  $\alpha/2 = 0.1/2 = 0.05$ , n:df=12, d:df=14

xInv= 2.5342

#### **2nd critical value "F Lower"**

- area:  $1-(\alpha/2) = 1-(0.1/2)=0.95$ , n:df=12, d:df=14

xInv= 0.3792

- For a one-tail test: simply plug in alpha as the area

### ANOVA (DIST-F-InvF):

Area:  $\alpha$

n:df: c-1

d:df: n-c

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Source	Degrees of freedom	Sum of squares	Mean square (variance)	F
Among groups	c-1	SSA	$MSA = \frac{SSA}{c-1}$	$F = \frac{MSA}{MSW}$
Within groups	n-c	SSW	$MSW = \frac{SSW}{n-c}$	
Total	n-1	SST		

Comparing the means of 2 related/dependent populations (paired t-test)-  
test  $\rightarrow t \rightarrow (1-s)$  ;  $df = n-1$

To determine whether populations are dependent:

- 1- Taken repeated measurements from the same set of items or individuals
- 2- Or, match items or individuals according to some characteristic

Null hypothesis for two related populations:

$H_0: \mu D = 0$  (where  $\mu D = \mu_1 - \mu_2$ )

$H_a: \mu D \neq 0$

**\*\*If standard deviation of the 2 populations are know, i.e. you have actual values  $\rightarrow z(2-S)$**

**\*\*If standards deviations of the 2 populations are unknown, i.e. you don't have the actual values  $\rightarrow t(2-S)$ .**

- If question says "variance are equal"  $\rightarrow$  pooled: ON
- If question says "variances are not equal"  $\rightarrow$  pooled: OFF

**\*\*If question is asking "test to see if variances are equal or not"  $\rightarrow$  F-Test**

EXTRA NOTES: