**HYPOTHESIS TESTING ASSIGNMENT**

**Problem 1 : Cutlets file.**

Y is continous and X is discrete in 2 catagories so we opt “2-Sample T-test”

Step-1: compare 2 samples

Step-2: Normality test

Ho = Data are normal

Ha = Data are not normal

From the normality test the p-value is **greater than 0.05 so “accept Ho”**

Step-3:Varience test

Ho = variances in diameters of 2 units is equal

Ha = variances in diameters of 2 units is not equal

From the variance test the **p-value(0.29)>0.05 so “accept Ho”**

Step-4: 2 sample T-test

Ho = Average diameter of unit A = average diamenter of unit B

Ha = Average diameter of unit A NOT = average diamenter of unit B

From the 2 sample t-test the p-value is **0.47** which is greater than 0.05 so we again **“accept Ho”**

**Solution for our business problem:** Both the Unit A and Unit B cutlets have the same diamenter more or less so take no action.

**Problem 2 : LabTAT file**

Y is continous and X is discrete in more than 2 catagories so we opt “1-way ANOVA”

Step-1: compare 2 samples

Step-2: Normality test

Ho = Data are normal

Ha = Data are not normal

From the normality test the p-value is **greater than 0.05 so “accept Ho”**

Step-3:Varience test

Ho = All variances in TAT’s of 4 laboratories are equal

Ha = Atleast one variances in TAT’s of 4 laboratories are not equal

From the variance test the **p-value(0.07)>0.05 so “accept Ho”**

Step-4: ANOVA test

Ho = All averages in TAT’s of 4 laboratories are equal

Ha = Atleast one average in TAT’s of 4 laboratories are not equal

From the 2 sample t-test the p-value is **0.00** which is less than 0.05 so we **“reject Ho which means accept Ha”**

**Alternate hypothesis : TUKEY’s Comparision**

Ho : (average)A <= (average)B <=(average)c

Ha : (average)A > (average)B >(average)c

From comparision tests 3>2>1>4 since they are all unequal we “accept alternate hypothesis”.

**Solution for our business problem: The TAT times of all four laboratories are unequal so take action accordingly.**

**Problem 3 : Customerorderform file.**

Y is discrete and X is discrete in 4 catagories so we opt “chi-square test”

Step-1: compare 2 samples

Step-2: Stack into two columns in the same file

Step-3:chi-square test for association

Ho = defective % in all the 4 countries is equal

Ha = defective % in all the 4 countries is not equal

From the chi-square test the **p-value(0.27)>0.05 so “accept Ho”**

**Solution for business problem:** all the four countries have same proportion “accept Ho”

**Problem 4 : Fantaloons file.**

Y is discrete and X is discrete in 2 catagories so we opt “2 proportion test”

Step-1: compare 2 samples

Step-2: 2 proportion test for association

Ho = proportions of weekday and weekends are equal

Ha = proportions of weekdaya and weekends are not equal

From the proportion test the **p-value(0.00)<0.05 so “accept Ha”**

**Step-3 : Accepting alternate hypothesis and comparing.**

Ho = Proportion(weekdays) <= Proportion(weekends)

Ha = Proportion(weekdays) > Proportion(weekends)

From the proportion test the **p-value(1.00)>0.05 so “accept Ho”**

**Solution for business problem:** % of male and women coming to the store on weekdays are less then the proportion of them attending on weekends “accept Ho”