Q.1

Problem statement:- Does the diameter differs significantly?

Y1 – diameter of cutlets of unit 1

Y2 – diameter of cutlets of unit 2

X – 2 samples –from unit 1 and 2

By the reference of the flow chart

1. Normality test

Ho – No action, if Y1 and Y2 are normal.

Ha – take action, if Y1 or Y2 are not normal.

Both data are assume to be normal as the p-value of both is high i.e. p-high Null fly.

Here, the external condition are not same so we will go for the variance test.

Ho – variance are equal

Ha – variance are not equal

p-high Null fly i.e. accept Ho

Go for 2 sample T-test for equal variance.

Case 1:- check equality

H0 – Mean of diameters of the cutlets of 2 units are equal

Ha - Mean of diameters of the cutlets of 2 units are not equal

p-high null fly i.e. accept Ho

Means the mean of diameters are equal hence there is no significant difference in the diameter of the cutlets of the from 2 Units.

Q.2

Problem statement:-Are the average TAT of 4 libraries are same?

Y1 – TATs of Lab-1

Y2 - TATs of Lab-2

Y3 - TATs of Lab-3

Y4 - TATs of Lab-4

X – No.of Labs – 4

By the reference of the flow chart

1. Normality test

Ho – No action, if Y1,Y2,Y3 and Y4 are normal.

Ha – take action, if Y1 or Y2 are not normal.

All data are assume to be normal as the p-value of both is high i.e. p-high Null fly.

So we will go for variance test

Ho – variance are equal

Ha – variance are not equal

p-low Null go accept Ha

we will use 2 sample T test using different combinations of the laboratories

Equality Tests:-

Case 1-Lab1 and Lab2

Ho – Average of TAT is equal

Ha – Average of TAT is not equal

p-high null fly, accept Ho

TAT averages of laboratory1 and laboratory2 are Equal

Case 2-Lab1 and Lab3

Ho – Average of TAT is equal

Ha – Average of TAT is not equal

p-low Null Go, accept Ha

TAT averages of laboratory1 and laboratory3 are not Equal

Case 3-Lab1 and Lab4

Ho – Average of TAT is equal

Ha – Average of TAT is not equal

p-low Null Go, accept Ha

TAT averages of laboratory1 and laboratory3 are not Equal

Case 4-Lab2 and Lab3

Ho – Average of TAT is equal

Ha – Average of TAT is not equal

p-low Null Go, accept Ha

TAT averages of laboratory1 and laboratory3 are not Equal

Case 5-Lab2 and Lab4

Ho – Average of TAT is equal

Ha – Average of TAT is not equal

p-low Null Go, accept Ha

TAT averages of laboratory1 and laboratory3 are not Equal

Case 6-Lab3 and Lab4

Ho – Average of TAT is equal

Ha – Average of TAT is not equal

p-low Null Go, accept Ha

TAT averages of laboratory1 and laboratory3 are not Equal

From above data we can determine that the average value of only laboratory-1 and laboratory-2 are equal.

While all the average TAT of other laboratories are not same i.e. they differ from each other significantly.

Q3:-

Problem statement:- Is the ratio of the male-female buyers same?

Y1 – ratio of east region

Y2 - ratio of west region

Y3 - ratio of north region

Y4 - ratio of south region

X – No.of regions - 4

By the reference of the flow chart

The X and Y both are discrete so we will use chi-square test for multiple Y’s to test the proportion equality.

Ho – All proportions are equal

Ha – Not all proportions are equal

We got p-value > 0.05

Hence p-high Null fly, accept Ho hypothesis.

Hence all the proportions of buyer ratio across 4 region are similar.

Q4.

Problem statement:- is the defective % varies from centre to centre?

Y1 – defective forms from Phillippines

Y2 - defective forms from Indonesia

Y3 - defective forms from Malta

Y4 - defective forms from India

X – No .of countries - 4

By the reference of the flow chart

The X and Y both are discrete so we will use chi-square test for multiple Y’s to test the proportion equality.

Ho – All proportions are equal, Defective % does not varies.

Ha – Not all proportions are equal, Defective % varies.

We got p-value > 0.05

Hence p-high Null fly, accept Ho hypothesis.

Hence all the proportions are equal % defects does not varies from region to region

Q.5

I didn’t understand the data of this question. I do get the question but the data doesn’t make sense. In the columns of weekdays and weekends, what is the male-female tags in each record represents.

Most of all are the 400 records represent no. of days or no. of weeks? Please confirm and help to improve if there are any problems with the above questions.