

## Practical: 05

### A. Perform testing of hypothesis using chi-squared goodness-of-fit test.

**Problem:** A system administrator needs to upgrade the computers for his division. He wants to know what sort of computer system his workers prefer. He gives three choices: Windows, Mac, or Linux. Test the hypothesis or theory that an equal percentage of the population prefers each type of computer.

system	O <sub>i</sub>	E <sub>i</sub>
windows	20	33.333333
mac	60	33.333333
linux	20	33.333333

H<sub>0</sub>: The population distribution of the variable is the same as the proposed distribution.

H<sub>1</sub>: The distributions are different.

**To calculate the Chi-Squared value for Windows** go to cell D2 and type  $=((B2-C2)^2)/C2$

**To calculate the Chi-Squared value for mac** go to cell D3 and type  $=((B3-C3)^2)/C3$

**To calculate the Chi-Squared value for linux** go to cell D4 and type  $=((B4-C4)^2)/C4$

Go to Cell D5 for “sum{[(O<sub>i</sub>-E<sub>i</sub>)<sup>2</sup>]/E<sub>i</sub>}” and type=SUM(D2:D4)

To get the table value for Chi-Square for  $\alpha = 0.05$  and dof = 2, go to cell D7 and type = CHINV(0.05,2)

At cell D8 type =IF(D5>D7, "H<sub>0</sub> Accepted", "H<sub>0</sub> Rejected")

### Output:

	A	B	C	D
1	system	O <sub>i</sub>	E <sub>i</sub>	sum{[(O <sub>i</sub> -E <sub>i</sub> ) <sup>2</sup> ]/E <sub>i</sub> }
2	windows	20	33.333333	5.333333333
3	mac	60	33.333333	21.33333333
4	linux	20	33.333333	5.333333333
5	total	100	100	32
6				
7			table value	5.991464547
8				H <sub>0</sub> Accepted
9				