SOMSONG SUBOONSAN$_*$: THE COMPARISON OF ABILITY TO CONTROL TYPE I ERROR AMONG F – TEST, F* – TEST, AND U – TEST WITH UNEQUAL VARIANCES OF POPULATIONS. THESIS ADVISOR : DEREK SRISUKHO, Ph.D., 105 PP.

The purpose of this study was to compare the ability to control Type I error of F – test, F* – test, and U – test. The study was designed for the situations where several samples were drawn from normal distributed populations with equal variances for some sets of study and unequal variances for other set. This study, was also designed to compare such ability for the situations where the sample sizes were different. The situations of equal sample size were designed for the sample of 10, 20, 30, 40, 50, 60, 70 and 100. The situations for unequal sample size study were designed as follow: (10, 10, 10, 30), (30, 10, 10, 10), (10, 10, 20, 30), (30, 20, 10, 10), (40, 40, 50, 50), (70, 70, 60, 60), (80, 80, 100, 100) and (100, 100, 80, 80). The Monte Carlo Simulation Technique was employed for this study.

The findings are summerized as follows:

1. F* – test procedure can control Type I error much better than F – test and U – test in the condition of small and large sample sizes, equal and unequal groups, with equal and unequal population variances.

2. As the population variances are equal F – test can control Type I error as specified (.05 and .01) for small and large, equal and unequal sample sizes.

3. When the sample size are large, U – test can control Type I error as specified for the equal and unequal population variances, and equal and unequal size of sample.

In the case of small and unequal sample sizes with unequal variances of populations the three statistics could not control Type I error as specified.