STATISTICS APPLIED TO BUSINESS ADMINISTRATION
ACADEMIC YEAR 2014-2015
PRACTICAL EXERCISE 8 (20 MINUTES)

Date: _____

Complete name:_____ ID number:_____

EXERCISE 1 (10 POINTS)

In a given neighborhood, we wish to estimate the mean expense in leisure activities per family and year. It is believed that, with regard to this specific expense, there are two clearly different types of families: the ones with larger consumption, which are those families with some members younger than 30, and families with smaller consumption, which are those with no members younger than 30. The total number of families in the neighborhood is 20000, with 5000 families belonging to the first type of families and 15000 to the other type. It is also known that the dispersion is larger for families with larger consumption when compared to the second type of families. Based on the above, the selected method of sampling is stratified sampling of 1000 families.

1. **(2 points)** If proportional allocation is used, what would the sample size for each stratum in the population under study be?
2. **(2 points)** What would happen to the sample sizes for each stratum in the population previously obtained under proportional allocation if n-optimal allocation is used instead? Comment on your response.
3. **(2 points)** If it is known that the expenses quasivariances for each one of the strata are 800, for the first type of family, and 500 for the second type, compute the sample sizes for each stratum if n-optimal allocation is used.
4. **(4 points)** Compute the estimator's variance for the mean expense in leisure activities per family and year for the aforementioned two types of allocation. Comment on your response.