BATNA 2 University of Algeria.
Mathematics and Computer Science Faculty
Common Core in Mathematics and Computer Science Department

Probabilities and Statistics II.
Semester-3. L2 SCMI.
Practical Exercises IV

Exercise 1

The pH (degree of acidity) measured in two types of of chemical solutions A and B is normally distributed. which we consider as the random variables X and Y. We note that $X \rightsquigarrow (\mu_1, \sigma_1^2)$ and $Y \rightsquigarrow (\mu_2, \sigma_2^2)$. In solution A, 5 measurements were made,with a PH mean of 7.49 and an estimated standard deviation of 0.032. In solution B, 6 measurements were made, with a PH mean of 7.52 and an estimated standard deviation of 0.024.

- Determine whether, at the significance level of 5% (risk), the two solutions have different PH (the hypothesis according to which the means and variances concerning the degrees of acidity). Theoretical value: $F_{0.05,(4,5)} = 5.19$.

Exercise 2

Two college instructors are interested in whether there is any variation in the way they grade math exams. They each grade the same set of 25 exams. The first instructor's grades have a variance of 89.9. The second instructor's grades have a variance of 52.3. Test the claim that both instructors have the same variance. In most colleges, it is desirable for the variances of exam grades to be nearly the same among instructors. The level of significance is 10 percent.