

EXAM OF STATISTICS (PROBABILITY AND RANDOM VARIABLES)

Pharmacy/Biotechnology 1st year

Version A

June 15, 2018

Name:

DNI:

Group:

Duration: 1 hour.

- (3 pts.) 1. A study about hypertension has found that 36% of people suffer hypertension, that 60% of smokers suffer hypertension and that 75% of people without hypertension are non smokers.
- (a) Compute the probability that a person is a smoker.
 - (b) Compute the probability that a person is a smoker or suffers hypertension.
 - (c) Compute the probability that a non smoker person does not suffer hypertension.
 - (d) Does suffering hypertension depend on smoking?
- (7 pts.) 2. It is known that eye pressure in patients with glaucoma follows a normal distributions with mean 26 mmHg and standard deviation 2.1 mmHg, while in people without glaucoma follows a normal distribution with mean 15 mmHg and standard deviation 2.8 mmHg. A test for detecting glaucoma gives a positive outcome when the eye pressure is above 22 mmHg and a negative outcome if not.
- (a) Compute the sensitivity and the specificity of the test.
Remark: If you are not able to compute this values, assume a sensitivity of 0.95 and a specificity of 0.97 for the following parts.
 - (b) If there are 6% of persons with glaucoma in the population, what are the positive and negative predictive values of the test?
 - (c) If we consider 10 persons with a positive outcome in the test, what is the probability that more than 8 suffer glaucoma?
 - (d) If we apply the test to 70 persons, what is the probability of getting between 2 and 5 positive outcomes, both included?