EXAM OF STATISTICS (PROBABILITY AND RANDOM VARIABLES)

Pharmacy/Biotechnology 1st year **Version A** **December, 16 2019**

Name: DNI: Group:

Duration: 1 hour.

(3 pts.) 1. To study the association between the osteoporosis and the gender a random sample of people between 65 and 70 years old was taken. The following table summarize the results

	Osteoporosis	Not osteoporosis
Women	480	2320
Men	255	1505

(a) Compute the prevalence of the osteoporosis in the population.

(b) Compute the relative risk of osteoporosis in females with respect to males and interpret it.

(c) Compute the odds ratio of osteoporosis in females with respect to males and interpret it.

(d) Which of the two measures is most suitable to study the association between the osteoporosis and the gender?

(3.5 pts.) 2. The risks of getting the flu in two cities A and B with the same population size are 14% and 8% respectively.

(a) Compute the probability of having more than 2 persons getting the flu in a random sample of 10 persons of the city A.

(b) Compute the probability of having more than 2 and less than 5 persons getting the flu in a random sample of 50 persons of the city B.

(c) Compute the probability of having 2 persons getting the flu in a random sample of 8 persons of the two cities.

(d) Compute the probability of having some person getting the flu in a random sample of 5 persons that have been living in both cities.

(3.5 pts.) 3. In a study about the cholesterol two samples of 10000 males and 10000 females was taken. It was observed that 3420 males and 1234 females had a cholesterol level above 230 mg/dl, and that 4936 males had a cholesterol level between 210 and 230 mg/dl. Assuming that the cholesterol level in males and females follows a normal distribution with the same standard deviation, compute:

(a) The means and the standard deviation of the distributions of cholesterol level in males and females.

(b) The percentage of males with cholesterol level between 200 and 240 mg/dl.

(c) The interquartile range of the cholesterol level of females.