STATISTICS APPLIED TO BUSINESS ADMINISTRATION. ACADEMIC YEAR 2023-2024 PRACTICAL EXERCISES 1 AND 2 (25 MINUTES)

Date: _____

Complete name:_____ ID number:_____

EXERCISE 1 (10 POINTS)

Let Z be a r.v. such that it follows a $b(0.70, n)$ binomial distribution, with variance $\text{Var}(Z) = 3.15$.

1. **(3 points)** Compute the probability $P(Z = 9)$.

2. **(2 points)** Compute the probability $P(Z > 10)$.

3. **(2 points)** What is the characteristic function for this r.v.?

4. **(3 points)** Compute the probability $P(7 \leq Z < 13)$.

EXERCISE 2 (10 POINTS)

The number of clients arriving, **every twenty minutes**, at a shopping mall follows a Poisson distribution with $P(X = 3) = P(X = 2)$. We assume independence between the arrivals of the different clients at the shopping mall.

1. **(3 points)** What is the probability that, **in one** hour, at least 4 clients arrive?

2. **(3 points)** What is the approximate probability that, in a **five-hour** period, fewer than 49 clients arrive?

3. **(4 points)** Assuming that each client arrives alone in one single car, what should it be the minimum capacity the place should have so that, with probability of at least 0.95, all clients that arrive in a given hour can park without any problem?