STATISTICS APPLIED TO BUSINESS ADMINISTRATION. ACADEMIC YEAR 2019-2020 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 $b(p, n)$ binomial distribution, with mean $\mathrm{E}(Z) = 12$ and variance $\mathrm{Var}(Z) = 4.80$.

1. **(2 points)** Compute the probability $P(Z = 5)$.
2. **(2 points)** Compute the probability $P(Z \geq 14)$.
3. **(2 points)** Compute the probability $P(Z = 18)$.
4. **(2 points)** What is the characteristic function for this r.v.?
5. **(2 points)** Compute the probability $P(5 \leq Z < 12)$.

EXERCISE 2 (10 POINTS)

The number of clients that arrive each minute at a given store follows a Poisson distribution such that $2P(X = 1) = P(X = 2)$. We assume independence between the different clients arriving at the store.

1. **(3 points)** What is the probability that, in a given minute, exactly 2 clients arrive at the store?
2. **(3 points)** What is the probability that, in a two-minute period, at least 8 clients arrive at the store?
3. **(4 points)** What is the approximate probability that, **in a thirty-minute period**, less than 131 clients arrive at the store?