STATISTICS APPLIED TO BUSINESS ADMINISTRATION. ACADEMIC YEAR 2021-2022 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 $\mathrm{E}(Z) = 10.5$ and variance $\mathrm{Var}(Z) = 3.15$.

1. **(2 points)** Compute the probability $P(Z = 4)$.
2. **(2 points)** Compute the probability $P(Z \geq 6)$.
3. **(2 points)** Compute the probability $P(2 \leq Z < 8)$.
4. **(2 points)** Compute the probability $P(Z \geq 16)$.
5. **(2 points)** What is the characteristic function of the r.v. Z?

EXERCISE 2 (10 POINTS)

The number of clients that arrive each 15 minutes at a given bank branch follows a Poisson distribution such that $2P(X = 5) = P(X = 4)$. We assume independence between the different clients arriving at the store.

1. **(3 points)** What is the probability that, in a given half an hour period, exactly 6 clients arrive at the store?

2. **(3 points)** What is the probability that, in a 15-minute period, at most 2 clients arrive at the store?

3. **(4 points)** What is the approximate probability that, **in a five-hour period**, at most 54 clients arrive at the store?