STATISTICS APPLIED TO BUSINESS ADMINISTRATION. ACADEMIC YEAR 2020-2021 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, such that its characteristic function is given by $\Psi_Z(u) = (0.70 + 0.30e^{iu})^n$ and variance Var(Z) = 4.20.

- 1. (2 points) Compute the probability P(Z = 4).
- 2. (2 points) Compute the probability $P(Z \ge 16)$.
- 3. (2 points) Compute the probability $P(4 \le Z < 10)$.
- 4. (2 points) Compute the probability P(3 < Z < 5).
- 5. (2 points) Compute the probability $P(7 < Z \le 16)$.

EXERCISE 2 (10 POINTS)

The number of clients that arrive each half an hour at a given store follows a Poisson distribution such that $\frac{1}{4}P(X = 3) = P(X = 4)$. We assume independence between the different clients arriving at the store.

- 1. <u>(3 points)</u> What is the probability that, in a given half an hour period, exactly 4 clients arrive at the store?
- 2. <u>(3 points)</u> What is the probability that, in a two-hour period, at least 6 clients arrive at the store?
- 3. (4 points) What is the approximate probability that, in a ten-hour period, more than 23 clients arrive at the store?