STATISTICS APPLIED TO BUSINESS ADMINISTRATION. ACADEMIC YEAR 2024-2025 PRACTICAL EXERCISES 1 AND 2 (25 MINUTES)

Date: _____

Complete name:_____ ID number:_____

EXERCISE 1 (10 POINTS)

Let Z be a binomial $Z \in b(p, n)$ r.v. such that its mean and variance are equal to E(Z)=2.5and Var(Z) = 1.875, respectively.

- 1. (3 points) Compute the probability P(Z = 4).
- 2. (2 points) Compute the probability $P(Z \ge 10)$.
- 3. (2 points) What is the characteristic function for this r.v.?
- 4. (3 points) Compute the probability $P(6 < Z \le 8)$.

EXERCISE 2 (10 POINTS)

The number of clients arriving, **every thirty minutes**, at a given supermarket follows a Poisson distribution with $\left(\frac{1}{3}\right)P(X=2) = P(X=3)$. We assume independence between the arrivals of the different clients at the supermarket.

- 1. (3 points) What is the probability that, in a **two-hour** period, at most 5 clients arrive?
- 2. <u>(4 points)</u> What is the approximate probability that, in a **ten-hour** period, more than 23 clients arrive?
- 3. (3 points) Assuming that each client arrives alone at the supermarket, what should it be the minimum number of cashiers the supermarket should have so that, with probability of at least 0.90, all clients can pay without having to wait in a given hour?