OPERATIONS MANAGEMENT EXAM

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Exercise 1 (9 points)

ABC S.p.A is organizing a fundraising event (for hospitals hit by the pandemic) that can hold up to 500 guests. The event consists in movie screening and a dinner.
ABC wants to maximize the revenues from this event so they decided to offer two types of tickets: a discounted one that people can buy from 90 days to 30 days before the event at 300 € and a full price one that people can buy from 29 days to the day before the event at 800 €.
They can certainly fill the venue selling only discounted tickets. The demand of full price tickets follows a normal distribution with mean 200 and a standard distribution of 62.

The company is offering a welcome drink to all participants and will pay the catering company a week after the event 12 € for each drink consumed. Based on the historical data they know that only 50% of the participants will take the drink.
They will also offer to all the people the dinner: ABC will pay the catering company two weeks before the event 40 € per person. Only to full price participants the company will give a special gold plaque of the event that costs 65 € each. These plaques are donated by a local Jewelry brand.
ABC will buy a souvenir before the event and give it to everyone: the small bag souvenir for Discounted costs 5 € each, while the big bag for Full customers costs 10 € each.
The company has rented the venue and a security service for a total of 15000€
After the movie, ABC expects discounted price ticket participant to not donate and estimate that 70% of the Full price participants will donate 80 € each.

Data interpolation is not requested. You can take the value that is closest to the one you desire.

Question 1) (3 points) Define how many tickets to allocate for each customer segment (Protection Level).

Question 2) (3 points) Calculate the probability with which ABC would make a profit higher than 100.000 €. (Consider Question 1 as the reference situation).

Question 3) (3 points) Define if and how the protection level changes if there is the possibility to sell the seats that are remained empty (both because they are not sold and because they are linked to a 10 % no-show phenomenon for Discounted segment) with a last-minute ticket price of 100 € the same day of the event, knowing that in this way it would be possible to sell without any problem all the ones offered. To the buyers of the last-minute tickets, will be offered the same services of discounted rate tickets. It is assumed that the last-minute buyers have the same behavior of discounted ticket buyers.