## ESCUELA SUPERIOR POLITECNICA DEL LITORAL

Administración de Operaciones Examen Final Term. II, 2019

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Firma:
Paralelo:
Fotal Points: 13 points. Your grade on this exam is = $100*(X/13)$

1. You have a company that needs to determine what kind of strategy to use in your sales and operations planning. Your hiring costs are \$60 per person, their firing costs are \$100 per person. It costs you \$1 to hold an item in inventory to the next period and your production costs are \$3 per unit. Each worker can produce 300 units per period. We begin with 200 workers. There are four periods. Period 1 has a demand of 6,000 units; period 2 has a demand of 2,000 units; Period 3 has a demand of \$5000 units; and period 4 has a demand of 3,000 units. Each worker gets a salary of \$2,000 per period. There is no starting inventory. Write a linear programming problem for your company where you are minimizing costs. Be sure to label your decision variables and include all constraints. (5 points)

2.	True or False: The preparation of food in a typical restaurant is an example of a front office activity. If true, give another example of a front office activity for a restaurant. If false, tell me what would make the statement true. (2 points)
3.	Consider a phone repair shop. There is only one repair technician who fixes the phones, so all potential customers go into a single line and wait. A customer arrives with a phone to be worked on every 6 minutes, on average (Poisson distribution). The technician can fix an average of 12 phones per hour (exponentially distributed).  a. Determine the average number of phones waiting to be fixed and the percentage of time the technician is working. (2 points)
	b. What would the customer arrival rate need to be in order for the technician to be busy 90% of the time (on average)? (1 point)

4. The number of failures in a typical 8-hour day and the average time to regain service are shown below. Which internet provider is best? Show your work for complete credit. (2 points)

Internet	Number of Failures	Time to Regain Service
A	8	2 minutes
В	6	4 minutes
С	2	10 minutes

- 5. Which of the following is the best definition of the inventory position? (1 point)
  - a. The amount of inventory on hand.
  - b. The amount of inventory needed to meet demand during the lead time.
  - c. The amount of on-hand inventory plus the amount of inventory ordered and waiting to arrive.
  - d. The amount of inventory ordered and waiting to arrive.