Nombre:

1. SOURCE CALL MODEL.

1.1. POISSION CALL SOURCE.

Question 2. Draw using MATLAB functions $F_\tau(t)$ and $f_\tau(t)$ for a value of $\lambda = 0.3\,\text{calls/s}$ between 0 and 20 sec. For constructing time domain use the command linspace (1,20,100) in order to create a vector with equally spaced time samples.

Question 3.b. Simulate a Poisson source with a calling rate of $\lambda = 0.3\,\text{calls/s}$, observed during a time interval 20000 of seconds. Show the time between arrivals.

Question 4: To check, represent in a bar diagram the histogram of the values (hist (x, 51))

Question 5. Compute the call arrival rate λ from the τ_i obtained and compare it with the source call rate (the inverse of the average value). Interpret the results.

	T (s)	λ obtained (Calls / s)
Series 1	20000	
Series 2	20000	
Series 3	200	
Series 4	200	

Question 6. Compare the value obtained with the practical procedure with the theoretical one and write both values in the table.

Theoretical λ'	Obtained λ'

Question 7. Get the theoretical values of the distribution by the Poisson distribution. Represent jointly both results by using a bar representation for the values of from the simulation and with line the theoretical ones.

1.2. EXPONENTIAL SERVICE TIME. OFFERED TRAFFIC.

Question 9: Represent in a graphical way the arrival and ending times of the calls.

Question 10: Observe figure where the traffic offered to the system ($A_{O,inst}$) is depicted and relate the results obtained with T.

Question 11 Compare the theoretical and the approximated values and interpret the results.

Question 12: Generate several series of calls with observation times, T, and fill the following table. Interpret the results.

	T (s)	A_O **theoretical**	A_O **obtained**
Serie 1	50		
Serie 2	50		
Serie 3	20000		
Serie 4	20000		

2. QUEUING MODEL SYSTEM.

2.1. LOSSY SYSTEM OR ERLANG-B.

Question 15: Construct a traffic table for 1-10 channels and for blocking probabilities of 1.5, 2.5, 7.5 and 15%. Compare these values with those presented in the problems book. Check also two of the values of the table with the corresponding values obtained using the recursive function.

	A_0 – Offered Traffic							
	P_B = 1,5 %		**P_B = 2,5 %**		**P_B = 7,5 %**		**P_B = 15 %**	
C	Obtained	Theor. (table)	Obtained	Theor. (table)	Obtained	Theor. (table)	Obtained	Theor. (table)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

2.2. WAITING SYSTEM OR ERLANG-C.

Cuestión 18: Construct a traffic table for 1-10 channels and for waiting probabilities of 1.5, 2.5, 7.5 and 15%. Compare these values with those presented in the problems book. Check also two of the values of the table with the corresponding values obtained using the recursive function (which includes the Erlang-B function).

	A_0 – Offered Traffic							
	P_B = 1,5 %		**P_B = 2,5 %**		**P_B = 7,5 %**		**P_B = 15 %**	
C	Obtained	Theor. (table)	Obtained	Theor. (table)	Obtained	Theor. (table)	Obtained	Theor. (table)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								