



OPER 441

Quiz # 1

First Semester 1444

Department of Statistics and Operations Research
King Saud University

الرقم:

الاسم:

الرجاء كتابة النتائج في الخلايا المناسبة

Problem 1 : Fill the Table الجدول بملاً الجدول.

Customer	Interarrival arrival time	Arrival time	Service time	Service begins	Service ends	Waiting time in queue	Waiting time in system	Idle time of server
1	5		6					
2	8		1					
3	3		6					
4	6		6					
5	1		4					
6	4		2					
7	5		6					
8	5		5					
9	2		5					
10	3		2					
11	7		3					
12	2		2					
13	7		3					
14	1		3					
15	3		1					
TOTAL								

احسب القيم التالية:

\bar{T}	\bar{S}	W_q	W_{wait}	$P(wait)$	P (idle server)

Problem 2 : Consider the following LCG : $R_i = 13R_{i-1} + 13 \pmod{16}$, $R_0 = 14$.

1. Fill the following table

i	1	2	3	4	5	6	7	8	9	10
R_i										
$U_i = \frac{R_i}{m}$										
i	11	12	13	14	15	16	17	18	19	20
R_i										
$U_i = \frac{R_i}{m}$										

2. Does this generator achieve the maximum possible period length? (Use the table).

If the answer is yes, then what is the length of the period ?.

.. هل يحقق هذا المولد أقصى طول الدورة ؟ (استعمل الجدول) . إذا "نعم" ، فما هو طول الدورة ؟

Problem 3 : Consider the following set of random numbers (see table الجدول).

i	R_i	$R_{(i)}$	$\frac{i}{N} - R_{(i)}$	$R_{(i)} - \frac{(i-1)}{N}$
1	0.8717			
2	0.0427			
3	0.5906			
4	0.8565			
5	0.2298			
6	0.4699			
7	0.8655			
8	0.5228			
9	0.3374			
10	0.1317			
11	0.2213			
12	0.6110			
13	0.3081			
14	0.5666			
15	0.8012			

Test the hypothesis that these numbers are drawn from $U(0,1)$ at a 95% confidence Interval ($\alpha = 0.05$)
using the Kolmogorov-Smirnov test. (استعمال الجدول)