CONCORDIA UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE AND SOFTWARE ENGINEERING

COMP 6651/2: Algorithm Design Techniques - Fall 2013

Quiz # 6 - December 3, 2013

First Name	Last Name	ID#

Question 1. **4 points**

Recall the definition of an approximation algorithm, and the type of problems it applies to.

Question 3 **8 points**

Compute the failure function F for the pattern $P = ababbabbabbababbabb$ when the alphabet is $\Sigma = \{a, b\}$.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
P	a	b	a	b	b	a	b	b	a	b	b	a	b	a	b	b	a	b	b
F																			

Question 2. **8 points**

Illustrate the Knuth-Morris-Pratt (KMP) algorithm on the following input string (S) and pattern (P). The failure function F has already been computed and its values are given in Table 1.

	1	2	3	4	5	6	7
pattern P	a	b	a	b	a	c	a
F	0	0	1	2	3	1	1

Table 1: Failure Function

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
String S	b	a	c	b	a	b	a	b	a	b	a	c	a	a	b