

Name: \_\_\_\_\_

score: \_\_\_\_\_ / 10

Instructions: There are 10 points possible on this quiz. No aids (book, notes, etc.) are permitted. You may use a non-programmable calculator. **Show all work and supporting calculations for full credit. Explain how you get your answers.**

**Cryptography**

- (3 pts) Encrypt the plaintext **O P P O R T U N I T Y** using a Vigenère cipher with key word **B E A D**.



**CIPHER TEXT:**

O	P	P	O	R	T	U	N	I	T	Y
B	E	A	D	B	E	A	D	B	E	A
P	T	P	R	S	X	U	Q	J	X	Y

D	A	M	B	A	B	F	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z			
E	F	G	H	I	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D
F	G	H	I	J	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	

- (1 pt) What sort of analysis is a Caesar shift cipher vulnerable to that a Vigenère cipher is not?

Letter Frequency Analysis

9 letters

3. (4 pts) Decrypt the message **NIXS SNUHE** if it was encrypted using a tabular transposition cipher with the encryption keyword **MUD**.

**PLAIN TEXT:**

<u>D</u>	<u>M</u>	<u>U</u>
N	S	U
I	S	H
X	N	E

<u>M</u>	<u>U</u>	<u>D</u>
S	U	N
S	H	I
N	E	X

SUNSHINE X

**Finance**

4. (2 pts) Your bill at a restaurant is \$86.40 and you want to leave a 18% tip.

a. How much would you add to the bill? Show your calculations.

$$86.40 (0.18) = 15.552 \quad \$15.55$$

b. What is the total amount you would pay if you paid exactly?

$$86.40 + 15.55 = \$101.95$$