

1. (300.00 pts) Timed Question Decode the following ciphertext:

[illegible]

Type your letters below the corresponding given letters. Your letters can be lower or upper case.

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| X | W | A | I | J | W | Z | , | N | W | V | G | D | K | V | G | N | I | K | R | N | P | G | D | M | O | R | P | F | O | R | G | N | K | J |
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Type your letters below the corresponding given letters. Your letters can be lower or upper case.

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[illegible]

Type your letters below the corresponding given letters. Your letters can be lower or upper case.

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| R | G | O | F | B | F | W | Y | G | J | X | W | P | A | F | D | , | X | W | A | O | F | G | D | S | G | Q | G | U | G | F | X | W | B |
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4. (500.00 pts)
Amy has faithfully followed the steps of the RSA key-generation algorithm, but has forgotten the last step—how to encrypt a message. First, here are the results from the other steps:

$p = 311$ $n = 257197$
 $q = 827$ $e = 79449$
 $\phi = 256060$ $d = 30589$

As it comes to pass, Jake is on vacation in Hawaii, and Amy needs a document that is stored in the company safe. They are communicating via email, and they both know it is very unwise to trust the security of computers in a hotel lobby. Amy needs to tell Jake his public key, knowing well that it can be read by untrustworthy parties. List the minimum set of numbers that Amy needs to email to Jake in order for Jake to be able to decode the message.

Additionally, Jake wants to transmit the combination to the safe (which is 930) in the response email but encrypted with RSA. What formula should Jake compute in order to know the ciphertext to transmit?

5. (350.00 pts) Decode the following ciphertext:

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | Ñ | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 4 | 1 | 1 | 5 | 5 | 0 | 0 | 4 | 4 | 4 | 4 | 1 | 2 | 0 | 0 | 3 | 1 | 1 | 9 | 3 | 9 | 0 | 5 | 3 | 5 | 0 | 1 |
| Replacement | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Type your letters below the corresponding given letters. Your letters can be lower or upper case.

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6. (400.00 pts) Decode the encrypted message:

AABBBABBABBABAAAABAAAAABAAABABAAAABABABABBAAABBB
AAAAAABBBBAABBBABAAAABBAABAAABBAABAAAABAABAA
AABBAABAAAABBAABAAABAAAABBABBAABBAABAAAABAABAAA
ABBAAAABBAABBBABBBABAAAABBAABBAABBAABAAAB

7. (400.00 pts) Decode the following ciphertext:

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | Ñ | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 0 | 7 | 1 | 7 | 6 | 6 | 3 | 0 | 0 | 1 | 5 | 2 | 3 | 8 | 0 | 6 | 0 | 2 | 5 | 2 | 0 | 4 | 0 | 0 | 2 | 6 | 0 |
| Replacement | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Type your letters below the corresponding given letters. Your letters can be lower or upper case.

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| N | U | D | M | B | Q | N | E | L | F | M | B | G | B | Q | Y | U | D | Y | D | O | O | U | S | K | D | R | B | M | N | O | L | F | K | B | E | C | G |
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| F | K | Y | U | N | E | K | D | R | E | X | B | N | R | J | S | R | D | X | O | B | Y | F | E | N | Y | E | Y | N | O | O | N | R | D | G | F | F | K |
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8. (375.00 pts) Encode the following text with the Vigenere Cipher using the code: "OMELET"

Type your letters below the corresponding given letters. Your letters can be lower or upper case.

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9. (550.00 pts) Given the plaintext, "PIANOS,"

and the key "BEAT,"

encode the plaintext using the Hill Cipher.

10. (400.00 pts) Decode the following ciphertext:

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | Ñ | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|-------------|---|----|---|----|---|----|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|----|---|
| Frequency | 2 | 11 | 3 | 11 | 5 | 12 | 7 | 8 | 0 | 3 | 5 | 2 | 0 | 10 | 0 | 3 | 2 | 3 | 9 | 5 | 0 | 2 | 1 | 0 | 3 | 15 | 0 |
| Replacement | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Type your letters below the corresponding given letters. Your letters can be lower or upper case.

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Type your letters below the corresponding given letters. Your letters can be lower or upper case.

[illegible]