

This test is designed to assess your knowledge of codes and ciphers on a theoretical and practical basis. Circle and write your answers on the answer sheet provided. Putting punctuation in free-response answers is optional. You will not lose points for incorrect answers. Partial credit may be awarded.

Note: The letter J should be excluded from all ciphers based on 5×5 letter squares.

~~~~~ Good luck, and have fun! ~~~~~

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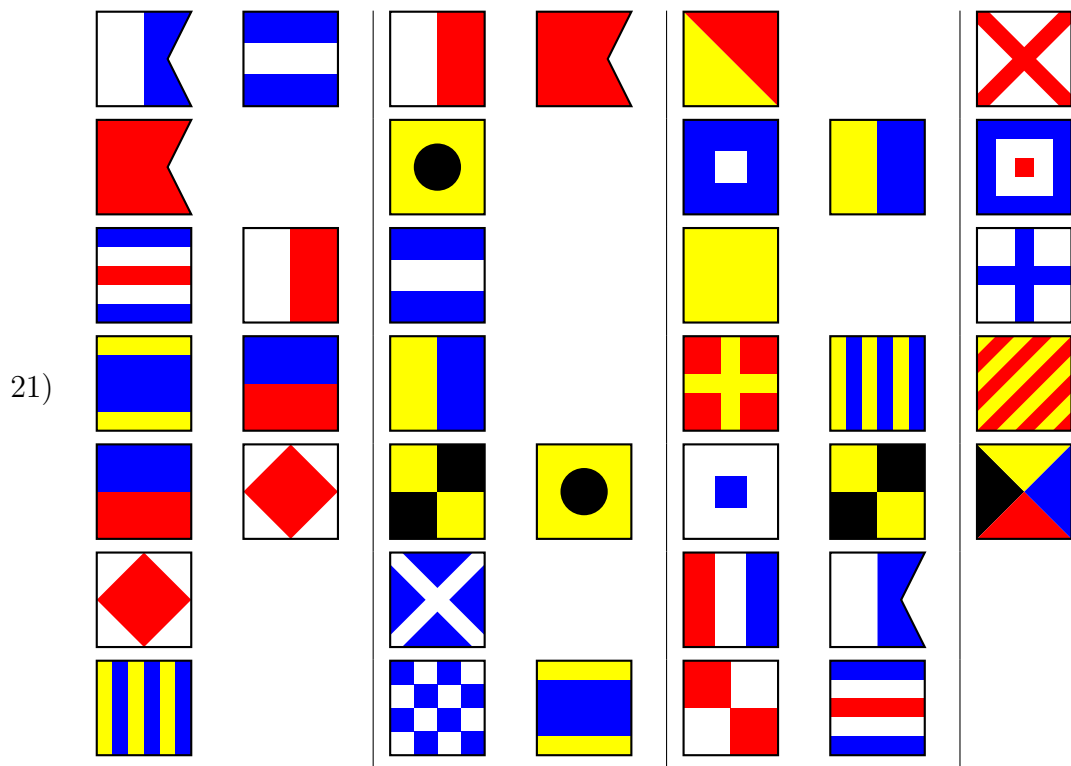
**Each of the following multiple choice questions is worth 2 points.**

- 1) What did ancient Spartans use to perform a transposition cipher to communicate during military campaigns?  
A) Atbash cipher      B) Caesar shift      C) Scytale      D) Polybius square
- 2) The original dot patterns of Braille were assigned to letters according to their position within the alphabetic order of what language?  
A) English      B) French      C) German      D) Spanish
- 3) First published in 1963, what standard for electronically encoding text uses seven bits of binary to represent a single character?  
A) ASCII      B) CSS      C) HTML      D) Unicode
- 4) *Kryptos* is a sculpture created by Jim Sanborn on the grounds of the headquarters of what organization in Langley, Virginia?  
A) Central Intelligence Agency      B) Federal Bureau of Investigation  
C) National Security Administration      D) Office of the Director of National Intelligence
- 5) Which of the following alphabets is used as a substitution cipher in both *Minecraft* and the *Comander Keen* video games?  
A) Dancing Man cipher      B) Gallifreyan  
C) Standard Galactic Alphabet      D) Zoni
- 6) Which of these is a secure encryption program that provides cryptographic privacy and authentication for data communication, later becoming an open Internet standard?  
A) Crypto1      B) PGP (Pretty Good Privacy)  
C) Røvert      D) WEP (Wired Equivalent Privacy)
- 7) Which of the following encryption methods cannot generate a ciphertext equivalent to the plaintext?  
A) Caesar shift      B) Cryptogram with the keyword **EXAMPLE**  
C) Enigma machine      D) Four-square cipher

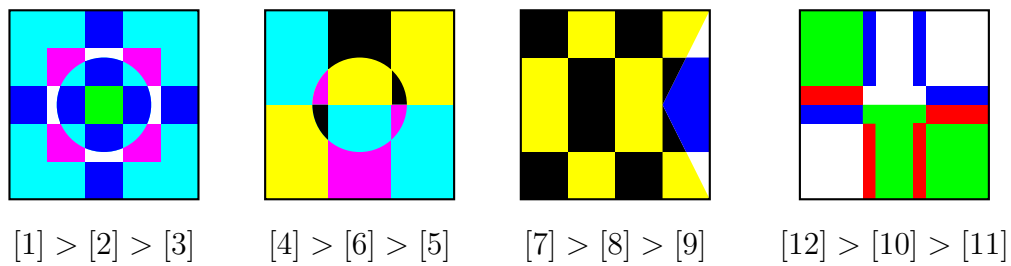
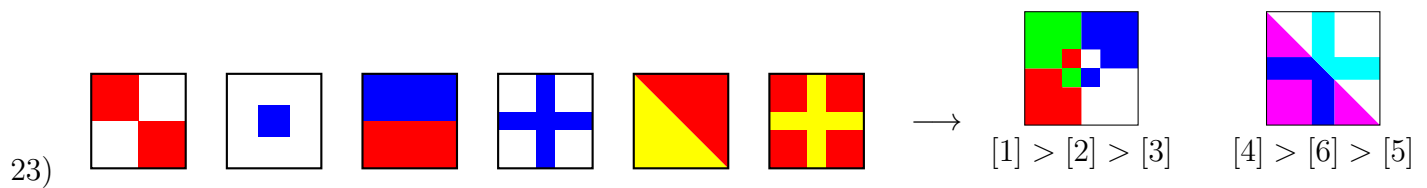
- Each of the following free response questions is worth 8 points.

- 20)





Each of the following puzzles is worth 14 points.



24) 21, 171, 979, 584, 000, 000

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**Name:**

**ID:**

**School:**

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For Questions 1) through 10), circle your answer.

*2 points each*

|                           |                           |                           |                           |                            |
|---------------------------|---------------------------|---------------------------|---------------------------|----------------------------|
| <sup>(1)</sup><br>A B C D | <sup>(2)</sup><br>A B C D | <sup>(3)</sup><br>A B C D | <sup>(4)</sup><br>A B C D | <sup>(5)</sup><br>A B C D  |
| <sup>(6)</sup><br>A B C D | <sup>(7)</sup><br>A B C D | <sup>(8)</sup><br>A B C D | <sup>(9)</sup><br>A B C D | <sup>(10)</sup><br>A B C D |

For Questions 11) through 21), write your answer.

*8 points each*

11) \_\_\_\_\_

12) \_\_\_\_\_

13) \_\_\_\_\_

14) \_\_\_\_\_

15) \_\_\_\_\_

16) \_\_\_\_\_

17) \_\_\_\_\_

18) \_\_\_\_\_

19) \_\_\_\_\_

20) \_\_\_\_\_

21) \_\_\_\_\_

For Questions 22) through 24), write your answer.

*14 points each*

22) \_\_\_\_\_

23) \_\_\_\_\_

24) \_\_\_\_\_

**Scoring:**  $\frac{\quad}{2 \times \# MC} + \frac{\quad}{8 \times \# FRQ} + \frac{\quad}{14 \times \# Puzz} = \underline{\hspace{2cm}}$