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**Directions**

1. Complete the following questions.

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1. Which of the following encryption schemes does a ciphertext leak nothing about the key that was used ?

- (a) The shift cipher
- (b) The Vigenere cipher
- (c) The encryption  $Enc_k$  where  $Enc_k(m) = m$

2. Convert the hexadecimal number  $0xb7$  to a decimal number.

- (a) "176"
- (b) "18"
- (c) "7"
- (d) "183"

3. Convert the hexadecimal number  $0x2ce$  to a binary number.

- (a) "0010 1100 1110"
- (b) "1110 1100 0010"
- (c) "1101 1100 1110 "

4. Consider the shift cipher where the key space is  $\{0,1,\dots,25\}$ . What is the probability that  $k = 15$ ?

- (a)  $1/25$
- (b)  $1/5$
- (c)  $1/26$
- (d) None of the above