Question a:

The time complexity for the algorithm I have used is $O(n^2)$.

Question b:

Test Data 1: Even parity with even number of ones
Input: cefi
Output:

Hex value of c: 63
Hex value of e: 65
Hex value of f: 66
Hex value of i: 69

Test Data 2: Even parity with odd number of ones
Input: abdg
Output:

Hex value of a: E1
Hex value of b: E2
Hex value of d: E4
Hex value of g: E7

Test Data 3: Odd parity with odd number of ones
Input: OQRTW
Output:

Hex value of O: 4F
Hex value of Q: 51
Hex value of R: 52
Hex value of T: 54
Hex value of W: 57

Test Data 4: Odd parity with even number of ones
Input: NSPV
Output:

Hex value of N: CE
Hex value of S: D0
Hex value of P: D3
Hex value of V: D6

Test Data 5: Even parity for mixed characters
Input: Abc#D
Output:

Hex value of A: 41
Hex value of b: E2
Hex value of c: 63
Hex value of #: 63

Hex value of D: 44

Test Data 6: Odd parity for mixed characters
Input: 174$Zy
Output:

Hex value of 1: 31
Hex value of 7: 37
Hex value of 4: 34
Hex value of $: 64
Hex value of Z: DA
Hex value of y: 79

Test Data 7: Even parity for special characters
Input: _____
Output:

Hex value of _: 5F
Hex value of _: 5F
Hex value of _: 5F
Hex value of _: 5F
Hex value of _: 5F

Test Data 8: Odd parity for integer characters
Input: 010101
Output:

Hex value of 0: 70
Hex value of 1: 31
Hex value of 0: 70
Hex value of 1: 31
Hex value of 0: 70
Hex value of 1: 31

Reference:
https://www.ibm.com/support/knowledgecenter/en/ssw_aix_72/com.ibm.aix.networkcomm/conversion_table.html