Saturday, January 23, 2016
4:52 AM

## Q4

a) function optimization

| binary | Floating Point |
|---|---|
| more accurate | less accurate |
| slow | Quick |
| needs encode/decode function | does not need encode/decode functions |
| normal binary bit mutation | Uniform/Non-uniform mutation |
| Crossover similar in each but in binary Xover pt anywhere in chromosome | Crossover similar to binary but Xover pt between $x_i / x_{i+1}$ at boundary |

b) range = 5 − 1 = 4

⇒ Precision = 6 dec. places.

⇒ $4 \times 10^6 \leq 2^n - 1 \cong 2^n$

$1 \times 10^6 \rightarrow$ 20 bits
$2 \times 10^6 \rightarrow$ 21 bits
$3 \times 10^6 \rightarrow$ 22 "
$4 \times 10^6 \rightarrow$ 22 "

⇒ **22 bits**

Decode fs

$$N = \frac{4 \sum_{i=0}^{21} b_i 2^i}{2^{22} - 1} + 1$$