Ques3

a) length $= m$ for binary

string.

if $m = 3$ eg.

$m = 3$

000

001

010     $= 8$ $= \underline{2^3} = 2^m.$

011

100

101

110

111

b) $m = 4$.

Schema $S_1 = 1***$

$1000 = 8$ 1100

$1001 = 9$ 1101

$1010 = 10$ 1110

$1011 = 11$ $1111 = 15$

$\Rightarrow$ av. fitness $(S1) =$

$$\frac{8 + 9 + 10 + \cdots + 15}{8} = \checkmark$$

Similarly for $0*** = S_2$

av. fitness $(S_2) =$

$$\frac{0 + 1 + 2 + \cdots + 7}{8} = \checkmark$$