

① Local Search:-

$$f(x) = (a+b)(c+d) + (e+f)(g+h)$$

a) $f(x_1) = (6+5)(4+1) + (3+5)(3+2) = 95 \quad ①$

$$f(x_2) = (8+7)(1+2) + (6+8)(0+1) = 57 \quad ④$$

$$f(x_3) = (2+3)(9+2) + (1+2)(8+5) = 94 \quad ②$$

$$f(x_4) = (4+1)(8+5) + (2+0)(9+4) = 91 \quad ③$$

b) 2 fittest 95, 94 x_1, x_3

$$x_3 = 23921285 \rightarrow x_5 = 23923532, f(x_5) = 95$$

$$x_1 = 65413532 \rightarrow x_6 = 65411285, f(x_6) = 94$$

c) x_2, x_4

$$x_3 = 23921285 \rightarrow x_7 = 21852085, f(x_7) = 65$$

$$x_4 = 41852094 \rightarrow x_8 = 43921294, f(x_8) = 116$$

d) $f(x_5) = 95$

$f(x_1) = 95$

Yes overall Improved

$f(x_6) = 94$

$f(x_2) = 57$

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$f(x_7) = 65$

$f(x_3) = 94$

$f(x_8) = 116$

$f(x_4) = 91$

Total = 370

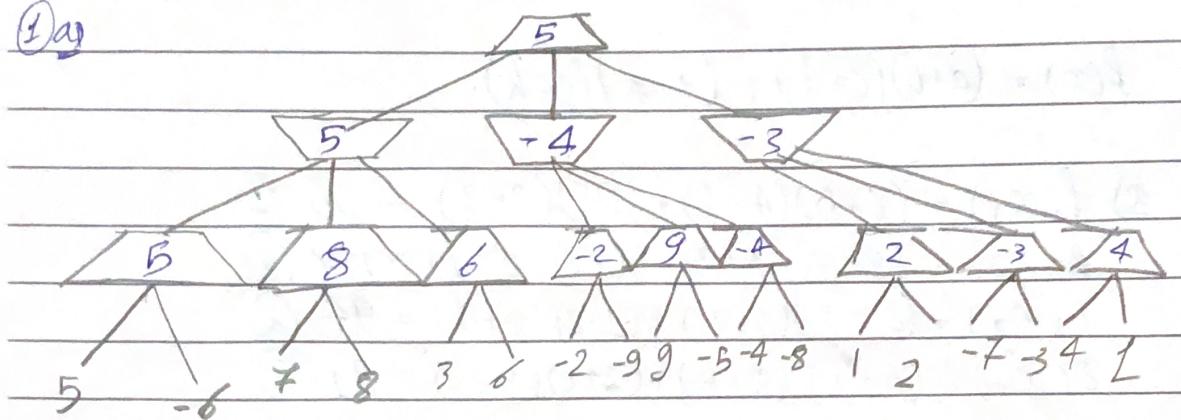
Total = 337

e) Maximum fitness $f = 99999999 = 648$

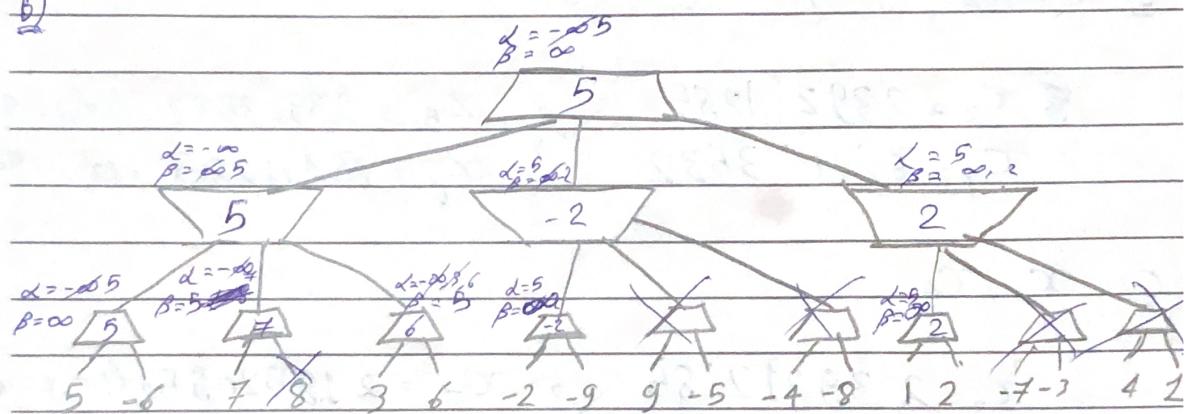
f) No not possible since some places don't have the value of 9 //

2) Mini Algorithms

1(a)



b)



2)

