

CSE422

Section -17

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Assignment 2

$$(I-i) = (i+j+k) \text{ and } (i^2 - i^2) = 150000$$

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Ans to the ques 1

a) Lets Assume N=4

	1	3	2	4
4				Q
3			Q	
2				Q
1	Q			
	0	1	2	3

so the solution chromosomes
will look like $[1, 3, 2, 4]$ representing queen
positions on the i th index.

b) Max pairs = $\frac{n(n-1)}{2}$ and

$$\text{Conflict} = (q_i = q_j) \text{ or } (|q_i - q_j| = |i - j|)$$

$$\therefore C = \sum_{\substack{i=0 \\ j=1+i}}^{n-1} \left[(q_i = q_j) \text{ or } (|q_i - q_j| = |i - j|) \right] \quad \begin{array}{l} i = x \text{ axis} \\ j = y \text{ axis} \end{array}$$

$$\boxed{\therefore F = \frac{n(n-1)}{2} - C}$$

Higher value of F is fitter the chromosome.

Answer to the Q2

⇒ Encoding scheme could be like this $[0, -1, 0, 1, 1, 0]$

Here, $0 \rightarrow \text{group A}$
 $1 \rightarrow \text{group B}$

⇒ So we have a similarity score.

so plan is to get the higher simila to the often group. Lower ones on the same group.

so a solution example.

A 0 C 0 E
[0, 1, 0, 1, 1]

group 1 → {A, C}

group 2 → {B, D, E}

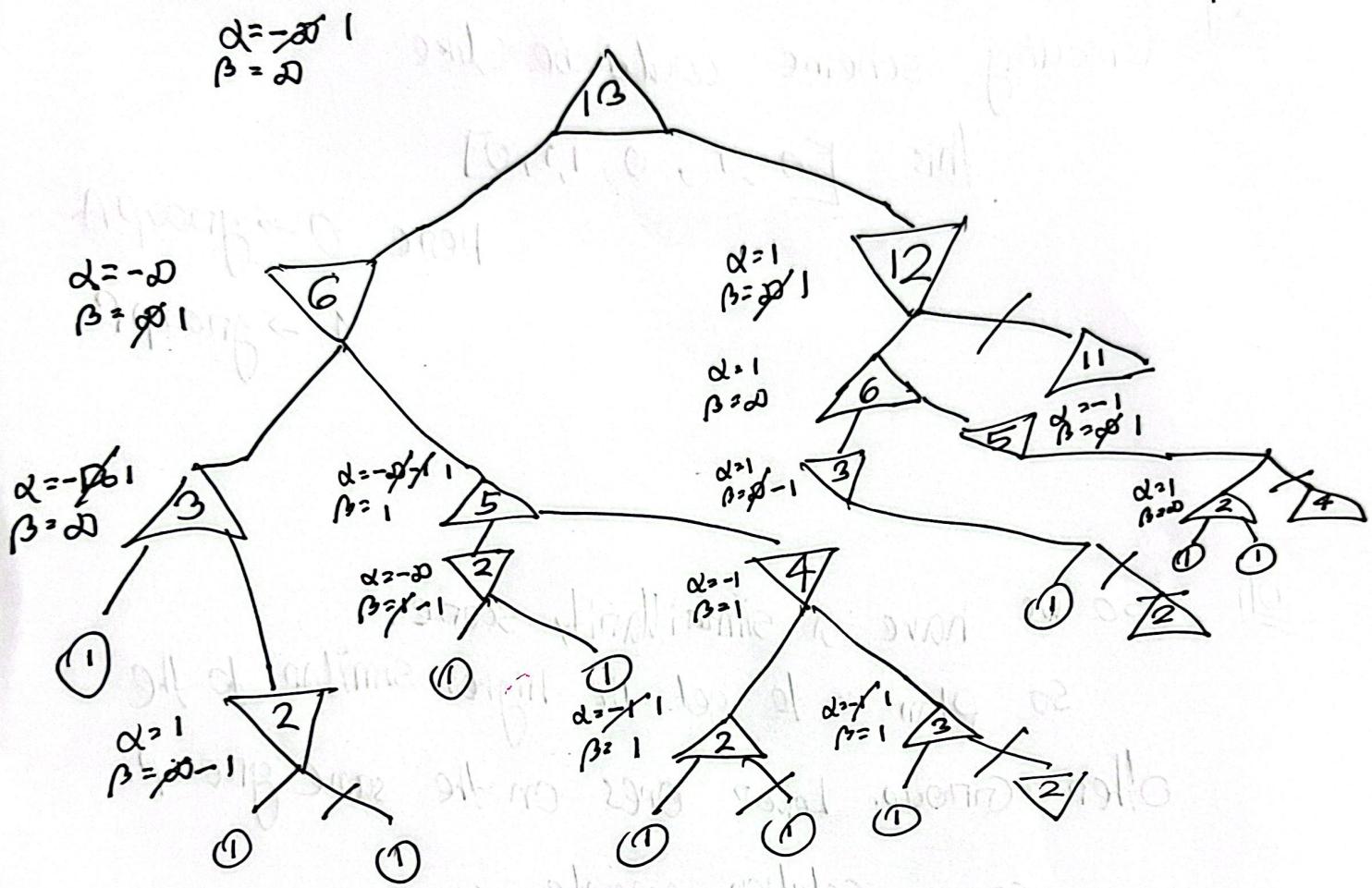
so From the given similarity score, we check all the combo, if they are in different group we add their mutual score. Else we subtract it

$$\text{diff group } F^+ = S[i][j]$$

$$\text{same group } F^- = S[i][j]$$

Higher the F , better the value.

Ans for the QF



$\left[\text{Cu}_2\text{O}_x \cdot \text{H}_2\text{O} \right]$

$\leftarrow A \{ \leftarrow \} \text{ queu}$

$\{x_0, x_1\} \in \text{edges}$

Answer of Q3

circuit might

a|| \Rightarrow Chromosomes of, look like \rightarrow

$$C_1 = [a, b, d, c] \quad C_2 = [c, d, b, a]$$

—

b|| Fitness

$$F = \frac{1}{\text{Cost of Path}}$$

higher the cost better fitness

—

c|| Order cross [unique element only \Rightarrow cross]

$$\begin{array}{cc|cc|c} a & b & c & d & e \\ d & b & a & e & c \end{array}$$

$$\Rightarrow \begin{array}{ccccc} a & b & e & c & d \\ d & b & c & a & e \end{array}$$

d|| swap mutation [unique element only so swap]

$$\begin{array}{ccccc} a & b & e & c & d \\ \downarrow & \rightarrow & \leftarrow & \uparrow & \uparrow \\ a & b & e & c & d \end{array}$$

$$\Rightarrow \begin{array}{ccccc} a & b & c & e & d \end{array}$$