2(b) Use Hungarian method

$R=$

	J_1	J_2	J_3	J_4
A_1	7	5	x	9
A_2	8	7	x	x
A_3	3	x	8	9
A_4	6	5	x	8

each row cut the Smallest one

A_1-5

A_2-7

A_3-3

A_4-5

$\Rightarrow$ R_1

	J_1	J_2	J_3	J_4
A_1	2	0	x	4
A_2	1	0	x	x
A_3	0	x	5	6
A_4	1	0	x	3

each column cut the Smallest one if the smallest one >0

J_3-5

J_4-3

R_2

$\Rightarrow$

	J_1	J_2	J_3	J_4
A_1	2	0	x	1
A_2	1	0	x	x
A_3	0	x	0	3
A_4	1	0	x	0

$\because$ Line $=3<\text{rank}(R)=4$

$\therefore$ Keep using the Hungarian method

$\Rightarrow$ the smallest uncovered area is 1

$\begin{cases} \text{uncovered area} : -1 \\ A_3J_2,\ A_4J_2 \text{ ∷ } +1 \text{ (rollback)} \end{cases}$

	J_1	J_2	J_3	J_4
A_1	1	0	x	0
A_2	0	0	x	x
A_3	0	x	0	4
A_4	2	1	x	0

$\because$ J_3 only has one zero,

$\therefore$ choose A_3J_3

	J_1	J_2	J_4
A_1	1	0	0
A_2	0	0	x
A_4	2	0	0

$\because$ J_1 only has one zero

$\therefore$ choose A_2J_1

$\Rightarrow$

	J_2	J_4
A_1	0	0
A_4	1	0

So there are only one choose,

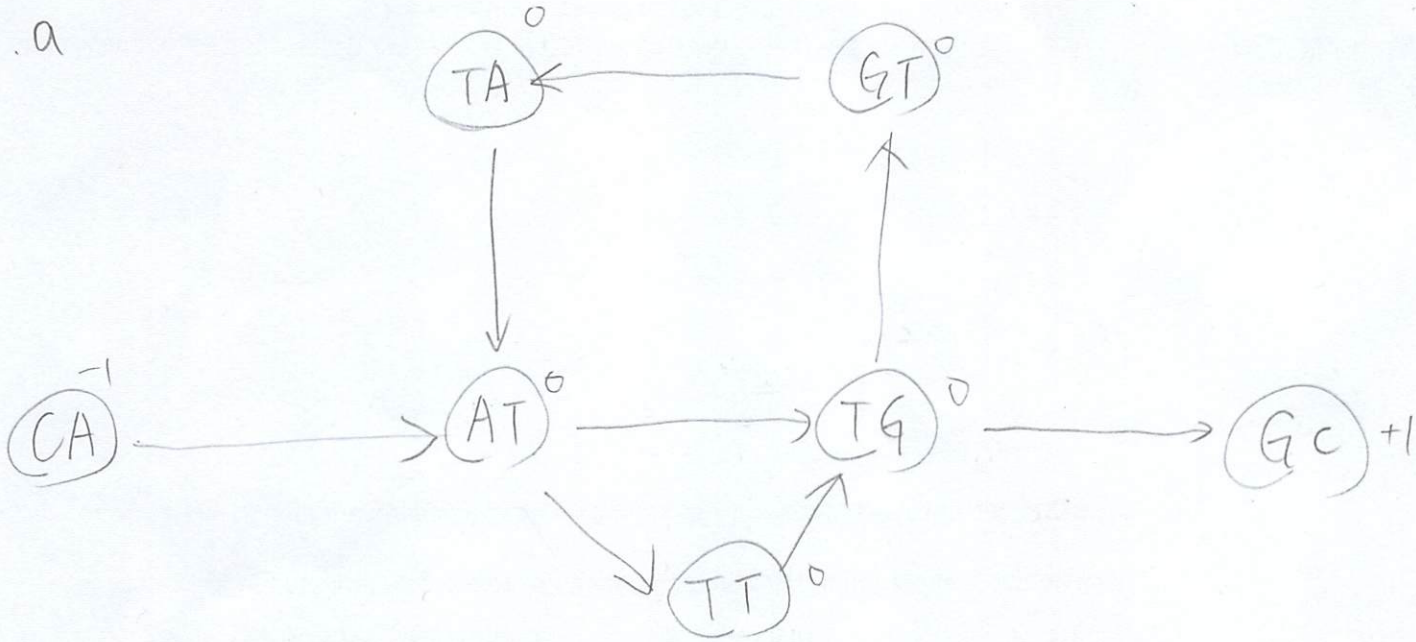
$\Rightarrow$ final result $=$

	J_1	J_2	J_3	J_4
A_1	7	5	x	9
A_2	8	7	x	x
A_3	3	x	8	9
A_4	6	5	x	8

$\Rightarrow$ minimal cost $=5+8+8+8$

$=29$

1.a



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(b)