Assignment - 2

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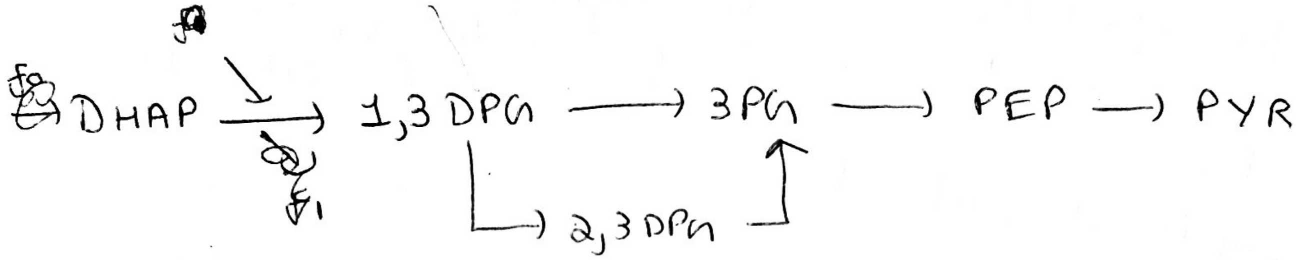
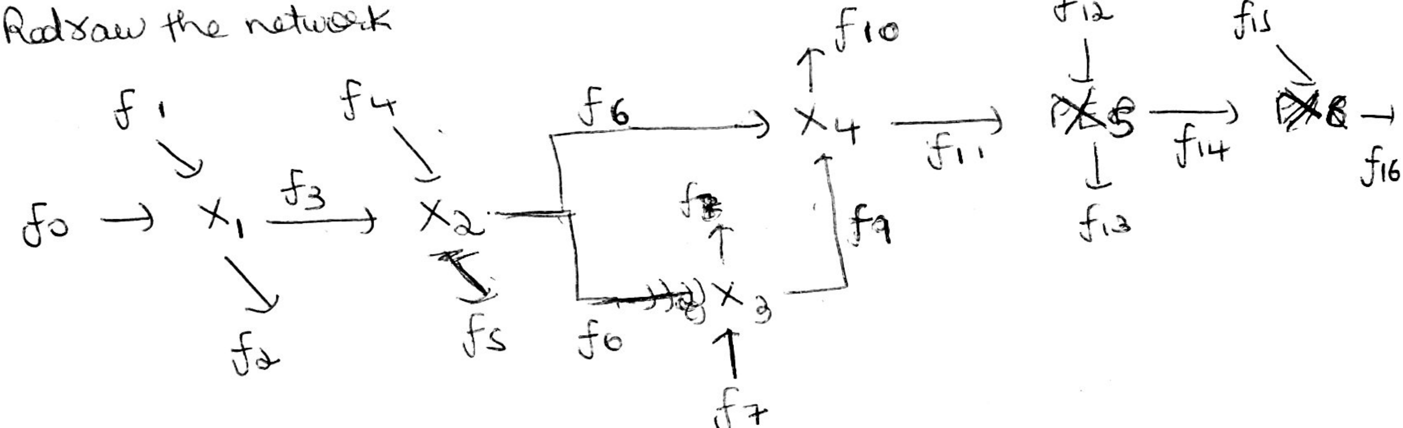


Now
Given

$[X]_T$ = Total concentration of X metabolite
$[X]_U$ = Unlabeled concentration of X metabolite
$[X]_L$ = Labeled concentration X metabolite

→ Redraw the network



Where
$X_1 = [DHAP]$ $X_3 = [2,3\ DPG]$ $X_5 = [PEP]$
$X_2 = [1,3\ DPG]$ $X_4 = [3PG]$ $X_6 = [PYR]$

a) Input flux = Output flux at node [i.e $X_1, X_2, \ldots X_6$]
and $[X]_U + [X]_L = [X]^T$ i.e condition to be in steady state.

b]

For x_1	For x_2	For x_3
$f_0 + f_1 = f_2 + f_3$	$f_3 + f_4 = f_5 + f_6$	$f_6 + f_7 = f_8 + f_9$
For x_4	For x_5	For x_6
$f_6 + f_9 = f_{10} + f_{11}$	$f_{11} + f_{12} = f_{13} + f_{14}$	$f_{14} + f_{15} = f_{16}$

c]

$$\frac{dx_1^U}{dt} = f_1 - f_x(x_1^U / x_1^T) \quad \text{where } f_x = f_0 + f_1 = f_2 + f_3$$

The equation gives the decaying of unlabled isotope metabolite withrespt to time. Or ~~it~~ tells the rate of disappearance of nlabeed/ unlabeed nutrited.