A

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | v1 | v2 | v3 | v4 |
| Aspartate | -1 | 0 | 0 | 0 |
| Argininosuccinate | 1 | -1 | 0 | 0 |
| Fumarate | 0 | 1 | 0 | 0 |
| Arginine | 0 | 1 | -1 | 0 |
| Urea | 0 | 0 | 1 | 0 |
| Ornithine | 0 | 0 | 1 | -1 |
| Carbomoyl Phosphate | 0 | 0 | 0 | -1 |
| Citruiline | -1 | 0 | 0 | 1 |
| ATP | -1 | 0 | 0 | 0 |
| PP | 1 | 0 | 0 | 0 |
| AMP | 1 | 0 | 0 | 0 |
| Water | 0 | 0 | -1 | 0 |
| P | 0 | 0 | 0 | 1 |

V5 is ignored because the net change would be zero if forward and reverse reaction proceed at the same rate.

B)

It is balanced (see matlab for calculation)

C)

4.24 mmol/gDW-hr