## Problem 5. (10 points):

Assume a System that has

1. A two way set associative TLB
2. A TLB with 8 total entries
3. $2^{8}$ byte page size
4. $2^{16}$ bytes of virtual memory
5. one (or more) boats

| TLB |  |  |  |
| :---: | :---: | :---: | :---: |
| Index | Tag | Frame Number | Valid |
| 0 | $0 \times 13$ | $0 \times 30$ | 1 |
|  | $0 \times 34$ | $0 \times 58$ | 0 |
| 1 | $0 \times 1 \mathrm{~F}$ | $0 \times 80$ | 0 |
|  | $0 \times 2 \mathrm{~A}$ | $0 \times 72$ | 1 |
| 2 | $0 \times 1 \mathrm{~F}$ | $0 \times 95$ | 1 |
|  | $0 \times 20$ | 0xAA | 0 |
| 3 | $0 \times 3 \mathrm{~F}$ | 0x20 | 1 |
|  | 0x3E | 0xFF | 0 |

A. Use the TLB to fill in the table. Strike out anything that you don't have enough information to fill in.

| Virtual Address | Physical Address |
| :---: | :---: |
| $0 \times 7 \mathrm{E} 85$ |  |
| 0xD301 |  |
|  | $0 \times 3020$ |
| 0xD040 |  |
|  | $0 \times 5830$ |

