

1.

To be able to convert code efficiently, we would use a string character that contains EBCDIC code, and based on that we would convert between the strings, so we would know what the equivalence of EBCDIC is to ASCII code.

2.

The machine cycle amount depends on the number of procedures each command does; thus, its primary influence is the addressing modes used by the commands. In the case of LDA* 100 and LDA 100, LDA 100 has one less machine cycle because LDA 100 uses direct addressing mode, so it goes to the memory location and then loads that memory location into the ACC, compared to LDA*100 which uses an indirect addressing mode meaning that it used the addressing value to find where in memory the address of said value is found. This takes an extra step compared to direct addressing where you only need to jump to memory and load those contents, LDA* 100 needs to jump twice to find its content to load into the ACC. LDA#100 uses immediate addressing modes which means that the operand is the value that is to be loaded into the ACC, and thus no jumps are needed, and that is why it has the least amount of machine cycles at two.

3.

An interrupt must store all registers because it needs to keep all the values that are not interrupted in the routine so it is able to go back to the pre-interrupt code, and the execution won't change.

4.

Which CUSP I/O port corresponds to the fifth character position of the seventh line of the CRT?

Port \$164 responds to be the fifth character position of the seventh line.

5.

It is necessary because if the IE flag would stay in the system, the machine would keep looping and keep executing implicit INT instructions.