

Assignment No. 5

Que-1 Explain the concept of memory mapping, partitioning of total memory space of 8085.

Ans -

Memory Mapping of 8085 -

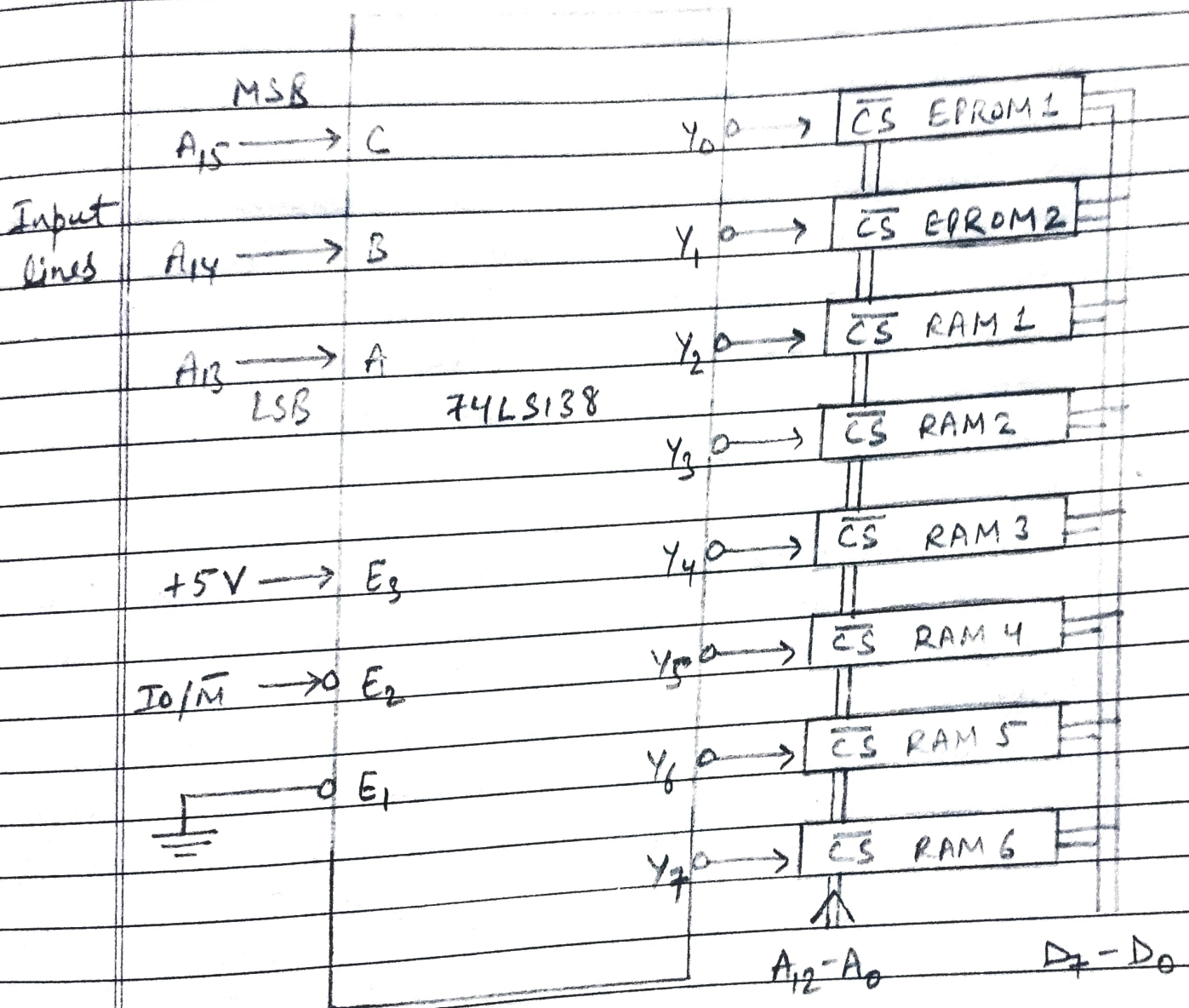
Memory interfacing is used to provide more memory space to accommodate complex programs for more complicated systems. Types of memories which are most commonly used in interface with 8085 are RAM, ROM and EPROM. 8085 can access 64Kb of external memory. It can be explained as - total number of address lines in 8085 are 16, therefore it can access $2^{16} = 65535$ locations i.e. 64Kb.

$2^n = \text{number of memory locations}$
where, $n = \text{number of address lines}$

Partitioning of total memory space of 8085 -

The 8085 microprocessor has 16 address lines. So, it can address a total of $2^{16} = 64K$ memory locations. Since 8085 has 8 bit data lines, so each memory location can be of 8 bit. Thus a total of 64K bytes of memory can be connected to the 8085 microprocessor. The total memory map of the 8085 microprocessor is 0000H to FFFFH.

Partitioning of 64K bytes of memory into eight parts of 8K bytes each using 3 to 8 decoder IC 74LS138:-



Ques-2 Explain the difference between peripheral mapped I/O and memory mapped I/O.

Ans -

Peripheral Mapped I/O

- They are assigned with 8 bit address values.
- They cannot be accessed like any other memory location.
- The instruction used are IN and OUT.
- Cycles involved during operation are IO read and IO write in the case of IO Mapped IO.
- Only accumulator can communicate with IO devices in case of IO mapped IO.
- Only 256 IO ports are available for interfacing in case of IO mapped IO.
- During writing or read cycles ($IO/\overline{M} = 1$).
- Special control signals are used in this.
- Arithmetic and logical operations cannot be performed directly on the data in the case of IO Mapped IO.

Memory Mapped I/O

- They are designed with 16-bit address values.
- IO devices are accessed like any other memory location.
- The instruction used are LDA and STA etc.
- Cycles involved during operation are Memory Read and Memory Write.
- Any register can communicate with the IO device in case of Memory mapped IO.
- 2^{16} IO ports are possible to be used for interfacing in case of Memory mapped IO.
- During writing or read cycles ($IO/\overline{M} = 0$).
- No separate \overline{SI} control signal required in this.
- Arithmetic and logical operations are performed directly on the data in the case of Memory mapped IO.

and \overline{RD} is active. Similarly, \overline{MEMW} is activated. ALE signal is used to demultiplex low-order address and data bus. Address decoder circuit activates address line of the input/output device for a particular 16-bit address.